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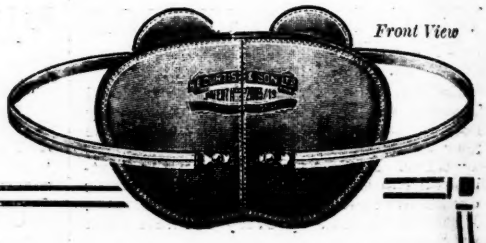
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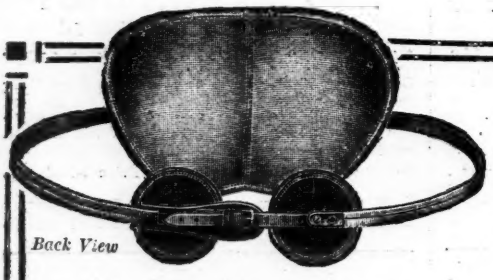
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Observations
ON THE
INFLUENCE OF FOODS RICH IN ACCESSORY FACTORS IN STIMULATING DEVELOPMENT IN BACKWARD CHILDREN.*

BY
HARRIETTE CHICK, D.Sc.LOND., LISTER INSTITUTE, LONDON. AND ELSIE J. DALYELL, M.B.SYDNEY, BEIT MEMORIAL FELLOW.
(From the Landes Zentral Kinderheim, Vienna.)

THE children described in this paper were in one ward of a large foundling hospital in Vienna, where we were permitted to work by the courtesy of the director, Dr. Gustav Riether. They varied in age from 1 to 3 years, and in growth, body weight, activity, and general development each was considerably below the normal standard for age and had been so for many months previously. The backward condition was in no way associated with existing illness, and the observations made on the group were of interest by demonstrating each child's approach to normal standard when dietetic changes were introduced.

In this institution there is an effective system of recording the body weight, diet, development, and medical history of every child, and it was therefore possible to trace the progress made since admission in the first weeks of life. The hospital is established in spacious modern buildings, and has a small staff of trained nurses, who supervise the wards. The care of children is undertaken by mothers, admitted with their infants from the obstetric clinics, who remain three to four months, in order to nurse their own babies and to assist in the care of those without mothers. As frequently happens in large institutions, the life of mothers and children is rather confined, and, owing to shortage of fuel, overcrowding could not be avoided in the reduced number of pavilions it was possible to heat.

Careful study of the past diets of the special group of children showed that after the three first months of life the calorie value of their dietary was usually adequate when breast milk had been supplemented by artificial food; but the types of food used suggested that defective growth might be due to qualitative deficiencies in the diet, from shortage of fats and of fresh elements. The frequent occurrence of infantile scurvy (Barlow's disease) in the institution and the prevalence of rickets pointed in the same direction.

The diets of the children consisted of diluted cow's milk, to which was added sugar, cereals, or proprietary infants' foods. The amount of vitamins in the food was therefore reduced in proportion to the amount of this dilution, and the same was true of the fat content. The antiscorbutic value of the milk food was further reduced, owing to the time that elapsed before it was consumed. It was reckoned that all milk was three to four days old when it was consumed in the wards. There is also little doubt that during the warm months the milk was heated at least once before delivery. All the food for some hundreds of infants was prepared in a central milk kitchen by standardized methods, which were studied in detail. The kitchen arrangements were admirable and there was no overcooking, but the irregularity of the milk delivery and the necessity for preparing large quantities at once, caused delay in the whole process of preparation. The food was prepared according to standard receipts under the control of one sister who had been in charge of the milk kitchen for over ten years.

By the courtesy of the director and with the co-operation of the physician in charge of the ward, dietetic treatment of a group of children was undertaken from December, 1919, to June, 1920. The main diet was still supplied from the central kitchen, but addition was made of (1) antiscorbutic material to supply this accessory factor, and (2) fats rich in the fat-soluble accessory factor.

Condition of the Children before Treatment.

In this communication nine children are specially selected for study; their ages ranged from 12 to 31 months. A short survey of their condition when first seen is set out in the accompanying table (p. 1065). All were under the normal weight for their age and in most cases the deficiency amounted to 25 or 30 per cent. The delay in development was more striking than the low body weight.

Four of the nine children could not sit up without support. Case 7 at 21 months lay inert, and if a limb were raised it fell back helplessly. Case 9, 31 months old, could not hold its head up for more than a few minutes and took no notice of its surroundings or of being handled. The absence of any spontaneous activity or movement among the children was a very striking feature. They showed little signs of awakened intelligence, they had no desire to play, and the older children made no attempts at speech.

With two exceptions, weight at birth was normal; Case 1 was a premature baby weighing 2,000 grams, and Case 8 was a twin and weighed only 1,600 grams. All had had some amount of breast feeding in the early months of life, and one child had had a complete diet of breast milk until 7 months old; most of the children, however, had made little progress at first, in spite of the breast feeding. It should be noted that the dates of their birth—1918 or early 1919—coincided with a period of great food deprivation in Vienna, and it is therefore probable that the mothers were imperfectly nourished during both pregnancy and lactation. In hospital, however, there was no serious shortage of calories in the diets after the breast feeding was supplemented or replaced by artificial food. The supplementary artificial food began from birth in 4 cases, and before 4½ months in 5 cases.

From the data available the calorie value and the proportion of milk fat in the diets were calculated from birth up to the time of the first examination of each child. The energy quotient or ratio of the calories consumed daily to the body weight expressed in kilograms was also calculated. This value was always maintained at the accepted† standard and averaged well over 100; in some cases it reached 150, 180 and even 200 for varying periods of time. The amount of milk fat was low in comparison with that taken by an infant fed on whole milk of good quality, whether human or cow's. The antiscorbutic value of the diet was low for the reasons given above.

Previous Illness.

The past history of the children showed furunculosis and otitis in many cases, but the outstanding fact was the occurrence of definite scurvy once or oftener in every instance except Case 1. Case 8 had suffered from two attacks, at 6½ and 13 months respectively, and Case 9 (31 months old) from three attacks, at 16, 20, and 24 months respectively. These two children were the most backward of the series considering their age. The symptoms of scurvy had consisted in swelling and tenderness of the limbs, especially the thighs, and in haematuria; mouth symptoms were rare.

In the treatment of scurvy in this institution some whole raw milk was given in the diet for a period varying from one or two weeks to some months, the time depending on the rate at which the symptoms subsided, and the amount upon the supply of raw milk available. In some cases raw lemon juice was also given, but no satisfactory method existed for its administration. Recovery was slow and often partial; in Case 8 symptoms persisted over a period of several months. Study of the weight charts of these children convinced us that failure to increase in weight was often associated with deficiency of antiscorbutic material in the diet. In many cases increase in weight had taken place when extra antiscorbutic was added to the diet, or when raw milk was substituted temporarily for the heated milk food.

Presence of Rickets.

Some symptoms of rickets were present in all children, and in five cases the disease was severe and definite deformity was present. A survey of the whole institution, made in March–June, 1920, showed that some degree of

* Report to the Accessory Food Factors Committee appointed jointly by the Lister Institute and Medical Research Council.

† Lusk (*Science of Nutrition*, third edition, 1917, p. 404) concludes that 80 calories per kilo of body weight would suffice during the first year of life; Heubner (*Berl. klin. Woch.*, 1901, vol. xxxviii, p. 449) allows 100 for the first three months of life, 90 from three to six months, and 80 afterwards; Holt (*Amer. Journ. Dis. Child.*, 1921, xxi) places the standard at 120 for the first few months and at 100 until the end of the first year.

rickets was common at 5 and 6 months of age, and that the disease was practically universal at 9 months—that is, at a period considerably earlier than that at which it is ordinarily supposed to be manifest. In arriving at a conclusion as to the existence of rickets attention was directed to the following points:

1. Condition of anterior fontanelle; presence of craniotabes; development of parietal and frontal bossing.
2. Enlargement of costochondral junctions; development and contour of chest.
3. Enlargement of epiphyseal ends of long bones at wrists and ankles; bowing of the tibiae.

Description of Treatment.

Treatment consisted in enriching the diet of these children with (1) the antiscorbutic vitamin and (2) the fat-soluble vitamin in form of animal fat. The diets remained otherwise unchanged except that in some cases food was withdrawn to balance the additional calories given in the form of fat. The energy quotient was in no case increased. The general management of the children remained the same.

The antiscorbutic material was given in the form of raw swede turnip juice, 10 to 20 grams daily; experimental work on scurvy in guinea-pigs had indicated that the raw juice of this vegetable possesses antiscorbutic properties comparable with those of fresh oranges or lemons. The clean cut surface of the raw vegetable was grated on an ordinary kitchen grater and the pulp squeezed in muslin by hand. It was given alone or with the food and was well tolerated in all cases. It was occasionally replaced by orange juice or lemon juice (neutralized with solid calcium carbonate and filtered), but during the winter 1919–1920 these fruits were too scarce and too expensive in Vienna for general use.

The fat-soluble vitamin was given in the form of cod-liver oil and butter. The initial dose was 10 grams of butter daily; in February, 1920, the daily dose of butter was increased to 20 grams for five of the nine children, and to these, in the month of April, 10 grams of cod-liver oil daily were given in addition. Cases 1 and 3 received cod-liver oil only, and Case 2 received an extra ration of 400 c.cm. full milk daily—that is, about 12 grams of milk fat.

The result of these additions to the diet was in every case satisfactory. The children began to put on weight at a more rapid rate than formerly, and the normal curve was gradually approached during the six months of treatment (see Table). The improvement is specially evident in Cases 8 and 9, where departures from the normal weight for the age, as great as 4 and 4.6 kg., were reduced to 1.2 and 2.4 kg. respectively.

But more striking than the increase in weight was the improvement of the children in general activities. Taking the four children, aged respectively 12, 21, 22, and 31 months, who were unable to sit alone, Case 7 could do so after six weeks, and Cases 1, 8, and 9 after two and a half to three months of treatment. Of seven children who showed no spontaneous movement of the legs when first examined, four (Cases 1, 4, 5, 8) stood within three months, and after six months all the children were beginning to walk. Another sign of satisfactory development was the rapid closing of the fontanelle, which in every case was open before treatment was begun.

Data collected from the past histories and during the period when the children were under observation were set out in charts showing the calorie value and fat content of the diets, together with the weight curves, plotted against the normal. That given by Pfaundler (1916) has been adopted as giving a fair average for normal growth. The past histories proved to be of great interest, especially as showing the influence of scurvy or of a prescorbutic condition upon increase in weight. It would take up too much space to give the detailed description of all the nine children, but four cases (4, 7, 8, and 9) have been selected as being specially instructive. Case 4A, that of a little girl nearly two years old, not, however, treated in the present series, has been added as a striking instance of growth induced by adding antiscorbutic to a deficient diet.

CASE 4. (Chart 1.)

At birth, August 22nd, 1918, this child was of normal weight (3.1 kg.), was breast-fed for six weeks, and then received diluted cow's milk, with additions of sugar, till six months old. Full milk and cereal were then given for a month. At seven months this was largely replaced by malt-soup (*Malzsuppe*), a preparation with calorie value equal to full milk, consisting of 33 per cent. milk, 4 per cent. flour, and 10 per cent. malt extract. The child throve poorly from the start, and the weight curve deviated more and more from the normal until about the tenth month.

The total calories (approximate) and daily ration of milk fat, together with the energy quotient, are plotted on the chart underneath the weight curve. There is no evidence of lack of calories in the diet throughout this period; the energy quotient varied from 120 to 150 during the first six months, and later (seven to ten months) it varied from 150 to 180; but, nevertheless, the child only put on 400 grams weight in this period. It is evident, therefore, that the high calorie intake had little effect in stimulating growth. The inhibiting factor appears to have been the deficiency of antiscorbutic material in the diet. Severe symptoms of scurvy were noticed at eight and a half months (April 29th, 1919), after a period of about seven weeks in which malt-soup figured largely in the diet. As demonstrated by Hess and Fish (1914), malt-soup is especially poor in antiscorbutic properties, for the milk is diluted 1 in 3 with water, and the food is boiled twice during the preparation. It is therefore possible that the malt-soup diet precipitated the onset of acute symptoms. The diet was changed at once to include a plentiful supply (1,000 to 600 c.cm.) of raw full milk, and growth began to take place slowly for the first month while the symptoms of scurvy remained, but later more rapidly. At 12 months the child weighed 5.5 kg., and at 16 months 8.1 kg. During this period there was no increase of calories or of fat, and the energy quotient progressively declined in value.

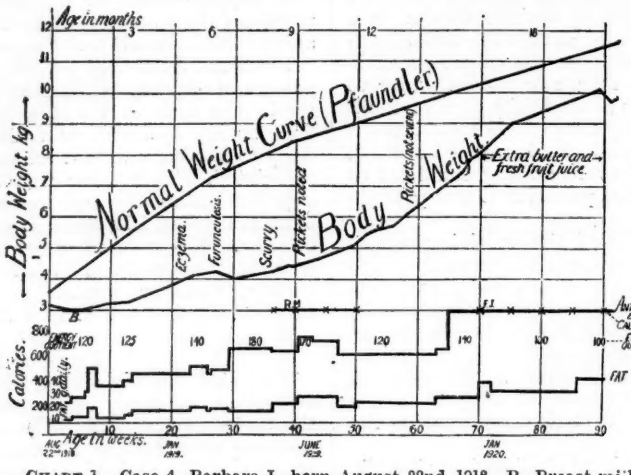

CHART 1.—Case 4. Barbara J., born August 22nd, 1918. B., Breast milk. R.M., Raw cow's milk. F.J., Raw fruit juice. E.Q., Energy quoteint of diet.

The prescorbutic period was marked by an attack of furunculosis. The scurvy attack was of a particularly severe character, the right thigh showed skin haemorrhages and was swollen and tender and the leg was maintained in a flexed position; blood cells were present in the urine. The acute symptoms yielded but slowly to treatment with raw milk, and after forty-one days (June 13th, 1919) haematuria still persisted. A persistent deformity (shortening of the right leg) was left; *x*-ray photographs taken in October, 1919, five months after the acute attack, when the child was 14 months old, showed structural deformity of the right femur, with 1 cm. shortening of the thigh as compared with the left; the left femur was also affected, but to a less degree. At this period a definite "rosary" and slightly bent tibiae are recorded as evidence of rickets.

Two months later, in December, 1919, the child was first seen by us. She was then 16 months old, and was receiving the mixed diet usual in the institution, consisting of milk, cocoa, puddings made with milk and cereals, finely sieved cooked vegetables, and a little bread. It was calculated that this diet had a calorie value approximately equal to 1,000 calories daily and contained 30 grams daily of milk fat. The weight curve was approaching the normal, but she was still 20 per cent. under weight for her age; her fontanelle was open; she had four teeth, but made no attempt to speak. The deformity of the right leg was still very obvious; she could sit up unsupported, but could not stand. She received a regular antiscorbutic in the form of 20 grams daily of raw swede juice or orange juice. The milk fat in her diet was gradually increased from about 30 grams daily to 35 to 40 grams, and later some cod-liver oil was given.

She made good progress during the succeeding five months, put on over 2 kg. in weight, the teeth erupted rapidly, the fontanelle was closed, there was marked increase in general intelligence and activity, and she learnt to walk.

This was the only child of the series who appeared to be unable to tolerate cod-liver oil, which caused loss of appetite accompanied by loss of weight, and consequently had to be discontinued.

Summary.

1. Marked failure to grow during the first nine months of life, associated with lack of antiscorbutic material in the diet, culminating in an attack of acute scurvy.
2. Growth in weight restored on inclusion of raw milk in the diet.
3. Permanent deformity of scorbutic origin in long bone of the skeleton.
4. An attack of furunculosis during the prescorbutic period, possibly due to a diminished resistance to infection.
5. Good progress from 16 to 21 months, when extra milk fat and antiscorbutic were added to the diet.

The next case offers interesting confirmation of the conclusions drawn from Case 4 as to the effect upon growth of a deficiency of antiscorbutic material in the diet. This child left the home shortly after our first visit in December, 1919; she received no treatment from us, and her case is not therefore included in the accompanying table.

CASE 4A. (Chart 2.)

At birth, on March 18th, 1918, the child was of average weight (3 kg.); she received some breast milk for six weeks, after which the diet consisted of diluted cow's milk and sugar, and from the third to the fifth month included a considerable amount of malt-soup. From the fifth to the twelfth month some full milk and cereal were given.

During this period growth in weight was very poor, and at 12 months the child's weight was about half that normal for the age. There had been no lack of calories in the diet (see Chart 2), but until the age of six months the proportion of milk fat was very low and never exceeded 20 grams daily. Later this improved, and from 10 to 12 months 30 grams of milk fat was taken daily. There was a deficiency of antiscorbutic material in the diet, especially when the malt-soup was given.

The prescorbutic period was again punctuated by various infections, furunculosis was noted at 6 months of age, again at 8 months and at 9 months; the child also had an attack of bronchitis at 10½ months.

At 12 months some degree of rickets was noted. At 13 months (April, 1919) acute symptoms of scurvy were recognized; blood was found in the urine, the gums were swollen, and the lower half of the right thigh was swollen and tender. The thorax was flat and the epiphyses thickened but not sensitive. Fruit juice was given and raw milk; this treatment was continued for three months. Growth in weight took place immediately this antiscorbutic treatment was begun; the weight, which was 5.2 kg. at 13 months, improved to 6.8 kg. at 16 months, and 9.2 kg. at 21 months, and was fast approaching the normal (11.4 kg.). Mixed diet containing vegetables was introduced at 17 months.

When seen by us at this time she was making progress although backward: she could stand but did not walk, she had eleven teeth but made no attempt to speak.

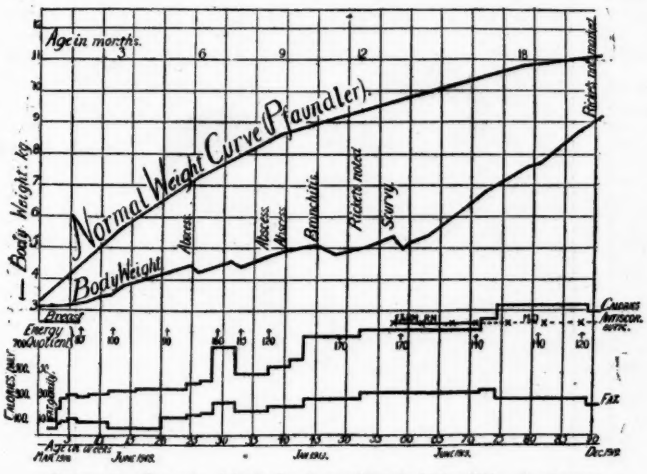

CHART 2.—Case 4A. Marie B., born March 18th, 1918. B., Breast milk. R.M., Raw milk. F.J., Fruit juice. M.D., Mixed diet.

CASE 7. (Chart 3.)

F. B. weighed 2.8 kg. at birth on April 4th, 1918. He also showed poor development during the first year of life. Breast-feeding was partial (300-350 c.cm. daily) until 5 months old, but at this age the weight had increased only to 3.6 kg. The artificial food given had consisted of malt-soup, and after breast-feeding was discontinued malt-soup formed the entire diet for a short period. At 6½ months the weight was only 3.8 kg.; breast milk was again introduced, supplemented by increasing amounts of full cow's milk. At 8½ months the weight was 4.4 kg., and the diet was changed to diluted cow's milk and cereal food.

At 11 months (weight = 4.9 kg.) definite symptoms of scurvy, swollen gums, and red blood cells in the urine were noted. Lemon juice and some raw milk were given; the scurvy symptoms improved slowly and were still apparent after four months' treatment, but the effect of antiscorbutic material in the diet was evident in the weight curve, which showed a slow but distinct improvement. The raw milk was continued for ten months (December, 1919), when the child was 21 months old and weighed 8 kg.

At this period we first saw the child in the backward condition summarized in the accompanying table. He could hold up his head but could not sit unsupported. His muscles were flaccid, the body fell limply forward, and if arm or leg were handled it would fall back helplessly when released. There was no spontaneous movement, muscular power was that shown by a normal baby of three months; the child resented handling and cried continuously. Dentition was not markedly backward and there were ten teeth. The contour of the head was very rachitic, the fontanelle was widely open and the epiphyses at wrists and ankles were enlarged. After this examination the antiscorbutic treatment of 150 c.cm. raw milk daily was increased (December, 1919) by the addition of 20 c.cm. of potent material in the form of raw turnip juice or orange juice. Butter was given (10-20 grams daily) and later 10 grams of cod-liver oil in addition, so that the daily fat ration reached 35–45 grams.

The following is a short summary of his progress:

Three weeks (January 16th, 1920). Weight 8,460 grams. Some improvement in muscular power, can sit up with some support but still feeble, and makes no attempt to use legs. More contented and sleeps better.

Six weeks (February 4th, 1920). Weight 8,710 grams. More active, can sit alone, and kneel in cot holding on to the bars with hands.

Ten weeks (March 5th, 1920). Weight 9,390 grams. Stood for first time; rickets less prominent in head contour, tibiae slightly bowed, chest contour good.

Twenty weeks (May 14th, 1920). Weight, 10,630 grams. Fine looking child, active, skin healthy, subcutaneous tissues firm, stands easily. Rickets much less apparent, head contour much improved, no parietal, and only slight frontal, bossing, tibiae straight, chest contour normal; wrist epiphyses show slight swellings.

Twenty-four weeks (June 16th). Weight 10,900 grams. Beginning to walk.

The improvement in weight is well seen in Chart 3, the 30 per cent. deficiency from the normal at 21 months is reduced to a 10 per cent. deficiency after five to six months' treatment.

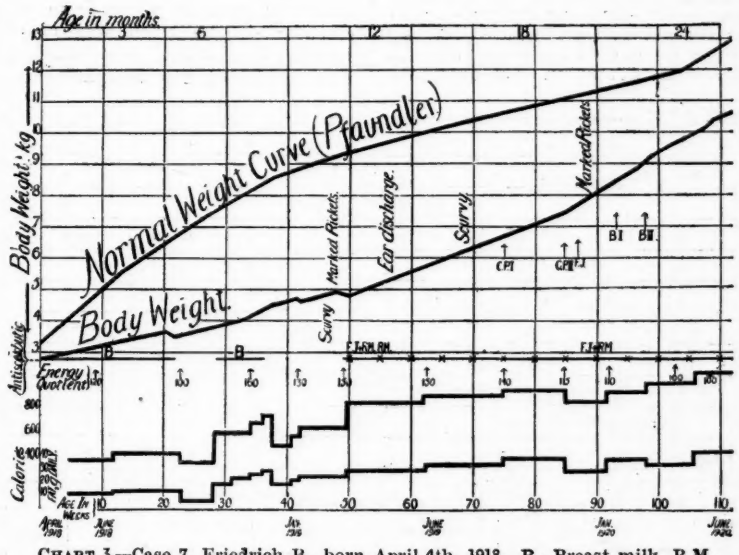

CHART 3.—Case 7. Friedrich B., born April 4th, 1918. B., Breast milk. R.M., Raw milk. F.J., Raw fruit juice. B. I, Butter 10 grams daily; B. II, butter 20 grams daily. C.P. I, 10 grams cod-liver oil containing phosphorus; C.P. II, cod-liver oil and phosphorus discontinued.

Summary.

1. This case shows a period of poor growth in weight, culminating in an attack of acute scurvy; improvement in growth in weight on adding antiscorbutic material to the diet.
2. Marked improvement in growth and also general progress and activity on adding a larger ration of antiscorbutic, and at the same time increasing the milk-fat.

CASE 8. (Chart 4.)

Ida P., born February 11th, 1918, was one of twins, and was much under normal weight at birth (1.6 kg.); her twin brother weighed 1.4 kg. She received a complete diet of breast milk for nearly three months; then followed a transitional period of mixed feeding for a few weeks, after which the diet was completely artificial, and consisted of diluted milk and cereal

food. This was continued for four months; at six months of age (September, 1918) definite symptoms of scurvy were observed. The child screamed on being handled, swellings were noticed on the left thigh and left shoulder, the epiphysis of the left humerus was swollen and painful, the muscles over the right tibia were swollen and oedematous, and skin haemorrhages were noted on chest, neck, and back. Raw full milk was introduced into the diet (800 to 600 c.cm.), fruit juice was given and an infusion of pine tree needles. The symptoms cleared up slowly, and after two months raw milk was discontinued and scurvy was considered to be cured. At this time (ten months) a moderate degree of rickets was noted.

During the first four months of life on breast milk the child made fair progress and the weight curve ran fairly parallel to the normal. There was marked flattening during the period preceding the scurvy attack and while the symptoms lasted. The weight, which had reached 4 kg. at 6½ months, remained stationary until 9 months, when the child weighed only 4.2 kg. After the definite symptoms of scurvy had disappeared some progress in weight was noted; although some full milk was retained in the dietary it was not given raw, and both fat content and antiscorbutic value were low. The short period of growth from 9 to 12 months was succeeded by another stationary period from 12 months (5.3 kg.) to 15 months (5.5 kg.). During this period there is a continuous record of coughs, feverish colds, etc., and in March, 1919, at 13 months of age, a second attack of acute scurvy took place, shown by a swollen, painful femur and presence of blood in the urine. Treatment with whole raw milk was again instituted, and at 14 months vegetables were also introduced into the diet. Growth in weight began slowly and proceeded evenly until December, 1919, when we first saw the child. Raw milk in decreasing amount had been continued with slight intermission till this date.

Ida P. (left) and Johann P. (right), June 22nd, 1920, at 28 months of age.

The child was then 22 months old, and weighed 7.6 kg., about 35 per cent. below normal. She was limp and passive, and her muscles were flaccid; she could neither sit nor stand, nor was there any attempt at spontaneous movement. She showed a moderate degree of rickets; she had four teeth, the fontanelle was still open, and distinct frontal bossing was present. The chest was rachitic in contour, with projecting sternum, palpable rosary, and a lateral sulcus at the rib junctions. The legs were straight, but there was a slight thickening of the lower ends of both tibiae. The wrists were not enlarged.

During the six months she was under observation she received daily 20 grams antiscorbutic material (raw lemon juice, swede-turnip juice, or orange juice) and 10 grams of butter. In February, 1920, the butter was increased to 20 grams, and in April 10 grams of cod-liver oil were given in addition. There was a dramatic improvement and the weight curve began to make a steep ascent towards the normal; five and a half months of treatment (up to June, 1920) reduced the deficiency in weight from 35 per cent. to 11 per cent. The child was then 27½ months old and weighed 11.1 kg. (normal for that age 12.5 kg.).

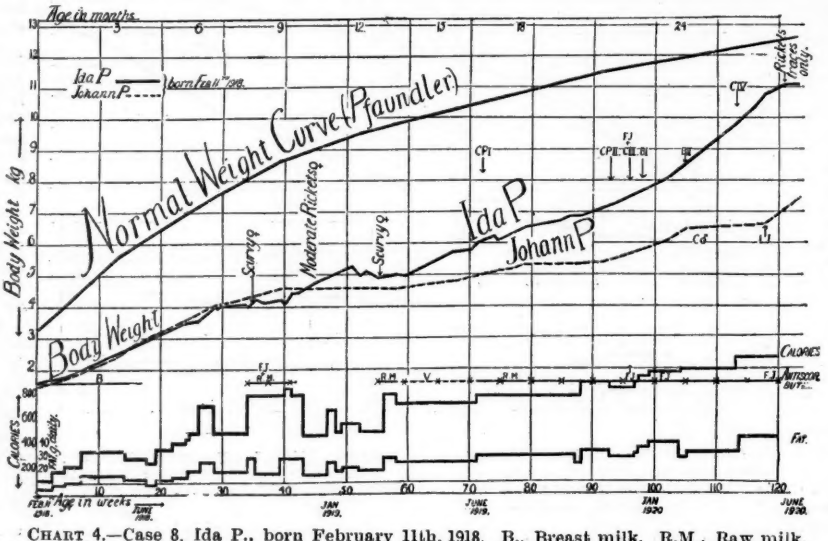

CHART 4.—Case 8, Ida P., born February 11th, 1918. B., Breast milk. R.M., Raw milk. V., Vegetable food. F.J., Raw fruit juice. C.P. I, Cod-liver oil with phosphorus 5 grams daily; C.P. II, cod-liver oil and phosphorus discontinued; C. III, cod-liver oil 5 grams daily; C. IV, cod-liver oil 10 grams daily. B. I, Butter 10 grams daily; B. II, butter 20 grams daily. Dotted curve = Johann P., her twin brother. C.δ, Cod-liver oil given. L.J., Raw lemon juice. Curves representing daily calorie and fat intake and antiscorbutic in diet refer to Ida P.

The rapid increase in weight during this period was accompanied by marked general progress, which is summarized in the Table. After five to six months of the enriched diet the little girl (at 28 months) was a transformed creature; she was active, merry, and plump, could stand and walk round her cot, and was trying to talk. She had twelve teeth, her fontanelle had closed, and there was a very striking remission in the signs of rickets noted on our first examination. No rosary and no swellings of the epiphyses were to be felt, and the chest contour had much improved. (See photograph.)

An unexpected control for this case was discovered in a twin brother, who had also been in the institution since birth but remained in another ward in the same building. The salient points of his past history were obtained, and his weight curve is plotted alongside that of his sister's (see dotted weight curve in Chart 4), and runs fairly parallel with it.

The brother suffered also from a severe attack of scurvy during the first year of life, and in his case the symptoms appear to have been present persistently from the ninth to the eighteenth month. During this period the body weight increased only from 4.2 to 5.3 kg., so that at 18 months of age the child was about half the normal weight. After this period various additions to diet were given in form of cod-liver oil and meat juice, but no regular antiscorbutic was given, and the weight curve remained very unsatisfactory until May, 1920, when he received for the first time raw lemon juice. This change coincided with a sharp upward turn in his weight curve.

It was at the end of this period that we first saw the child, who was feeble, anaemic, and unable to sit up without support. His arms and legs were thin and ill developed, his condition was lethargic, and he showed no signs of intelligence. The contour of the head was rachitic, the fontanelle was closed, but there was marked frontal and parietal bossing, the chest was compressed laterally, there was a definite rosary, and the abdomen was prominent. His condition exactly reflected that of his twin sister six months previously before her diet was enriched. The contrast between the two children is well shown in the accompanying photograph.

We are inclined to attribute the improvement in the twin sister principally to the effect of a regular and potent antiscorbutic in the diet, for the proportion of fat, though increased also, was not so greatly altered, and the child also had been taking a small amount of cod-liver oil daily before she came under our notice.

CASE 9. (Chart 5.)

V. J., aged 2½ years old when first seen, was the oldest of the series and at the same time the most backward. She was about 35 per cent. under weight for her age, did not even hold up her head, and made no attempt at spontaneous movement. She weighed 2.8 kg. at birth (May 12th, 1917), and after one

Case No.	Sex.	Date of Birth, and Wt. in Kg.	Date of Examination.	Age (Mths.)	Duration of Treatment (Mths.).	Body Weight (Kg.).	Normal for Age (Kg.).	Difference (Kg.).	Description.	Treatment (daily).	History of Scurvy and Other Illnesses.
1. J. U.	M.	7.12.18 (2.0)	22.11.19	12	0	6.2	9.4	3.2	Cannot sit. No attempt to use legs; rickets severe in head and chest; enlarged epiphyses; no teeth.	10 g. antiscorbutic.	
			5.3.20	14	2½	8.2	10.1	1.9	Moves actively; stands in cot; shows signs of intelligence; rachitic deformities less obvious; no teeth	10 g. cod-liver oil.	
			14.5.20	17	5	9.6	10.8	1.2	Can stand unsupported; tries to talk; rickets arrested, though deformities persist; tissues firm; muscular power good.	Cod-liver oil 20 g. from April 15.	
2. J. R.	M.	5.1.19 (3.5)	22.12.19	12	0	5.9	9.4	3.5	Can sit; tries to use legs: fontanelle open (2 cm.); slight signs only of rickets; good muscular power; two teeth.	20 g. antiscorbutic from Jan. 10, 1920. 400 g. extra milk from Feb. 10, 1920.	Scurvy at 8½ months.
			13.4.20	16	3	8.9	10.3	1.4	Stands well with support; colour good; traces only of rickets; 6 teeth; fontanelle still open.		
			16.6.20	13	5	9.2	10.8	1.4	Fontanelle closed and firm: slight enlargements of epiphyses the only sign of rickets; can stand alone and walk round cot; 6 teeth.		
3. R. H.	M.	10.10.18 (2.9)	22.12.19	14	0	8.2	9.9	1.7	Can sit, but makes no attempt to stand; well grown; good muscular power but activity poor; general development as for child of 9 months; rachitic stigmata in rib junctions and epiphyses; fontanelle open; 4 teeth.	20 g. antiscorbutic. 10 g. cod-liver oil from Feb. 18, 1920.	Scurvy at 8½ months.
			13.4.20	18	4	9.9	10.8	0.9	Active; stands in cot; no progress in rachitic stigmata; fontanelle closed; 12 teeth.		
			15.6.20	20	6	10.8	11.7	0.9	Can just walk; tone of all tissues good; enlarged epiphyses the only sign of rickets; development normal for age.		
4. B. J.	F.	22.8.18 (3.1)	10.12.19	16	0	8.1	10.3	2.2	Can sit but cannot stand; tone of tissues good; spontaneous movements not vigorous; fontanelle open; 4 teeth; rickets slight. Backward child, still suffering from effects of a severe attack of scurvy; right femur shows 1 cm. shortening.	20 g. antiscorbutic. 20 g butter. 10 g. cod-liver oil in addition from April 15 to May 12, 1920.	Scurvy, 8½ to 10 months: furunculosis 6 to 7 months.
			5.2.20	17½	1½	9.1	10.7	1.6	Stands and can walk with assistance; no progress in rickets; fontanelle almost closed; marked general improvement.		
			14.5.20	21	5	9.9	11.4	1.5	Condition good; child vigorous and intelligent; activity normal for age; dentition proceeding rapidly; rickets stationary.		
5. W. W.	M.	5.8.18 (2.9)	5.12.19	16	0	8.7	10.3	1.6	Can sit but cannot stand; well grown; makes no spontaneous movements; pallid; no obvious sign of rickets; 5 teeth.	20 g. antiscorbutic. Butter, 10 g. from Jan. 1, 1920; 20 g. from Feb. 17, 1920. 10 g. cod-liver oil in addition from April 15, 1920.	Scurvy at 10½ months; furunculosis.
			5.2.20	18	2	9.7	10.8	1.1	Stands with support and moves vigorously about cot; pallor less marked; epiphyses slightly enlarged.		
			8.5.20	21	5	11.6	11.45	—	Can stand alone; condition good; fontanelle closed; 7 teeth; intelligence and activity normal for age (three weeks later could walk alone).		
6. A. D.	M.	30.6.18 (4.1)	22.12.19	18	0	9.5	10.8	1.3	Child sits and can stand up in cot; muscular power good, but activity poor and mental condition lethargic; marked rachitic deformities of head, chest, and legs; tibiae bowed; shortening and disproportion of limb; fontanelle almost closed; 8 teeth. Child had fracture of the radius at 12 months following severe attack of scurvy.	20 g. antiscorbutic. Butter 10 g.; 20 g. from Feb. 17, 1920.	Scurvy, 7 to 11 months; furunculosis.
			3.2.20	19	1½	10.7	11.1	0.4	Stands well; tries to walk and to talk; seems normally intelligent. Rickets arrested.		
			13.4.20	21½	4	12.0	11.6	—	Excellent condition of all tissues; activity normal for age; intelligent; deformities less marked; 10 teeth.		
7. F. B.	M.	4.4.18 (2.8)	23.12.19	21	0	8.1	11.4	3.3	Very backward; no attempt at spontaneous movement; all tissues flaccid and muscular power very defective; limbs fall limply after being raised; child lies inert and resents handling; head rachitic and epiphyses much enlarged; fontanelle widely open; 10 teeth.	20 g. antiscorbutic. Butter 10 g.; 20 g. from Feb. 20, 1920. 10 g. cod-liver oil from April 15, 1920.	Scurvy, 11 to 15 months.
			4.2.20	22	1½	8.7	11.7	3.0	Can sit alone and can kneel in cot; muscular power improved but legs still feeble; 15 teeth; is making rapid progrers.		
			5.3.20	23	2½	9.4	11.9	2.5	Can stand; rickets arrested and deformities less marked; fontanelle closed; colour improved.		
			16.6.20	26	6	10.9	12.3	1.4	Child beginning to walk; all tissues in good condition; rachitic stigmata retrogressing; head contour improved; remarkable improvement in activity and intelligence; marked disproportion of limbs to length of body.		
8. I. P.	F.	11.2.18 (1.6)	23.12.19	22	0	7.6	11.6	4.0	Very backward; cannot sit even with support; tissues soft and muscles very flaccid; child passive and makes no attempt at spontaneous movements; rickets shown in moderate degree in head, chest, and lower ends of tibiae; fontanelle open; 4 teeth. Child shows no intelligent interest in surroundings; marked pallor.	As for Case 7.	Two attacks of scurvy, at 8 months and 13 months.
			4.2.20	24	1½	8.3	12.1	3.8	Tries to sit; is more active; rickets stationary; still pallid; fontanelle open; 4 teeth.		
			3.3.20	25	2½	8.9	12.2	3.3	Can sit alone, but makes no attempt to stand; muscular power still feeble; fontanelle closed; 6 teeth. Child appears more intelligent and tries to talk.		
			13.4.20	27	4	9.8	12.3	2.5	Marked improvement in activity; tries to crawl; 12 teeth; is intelligent and contented.		
			1.6.20	27½	5½	11.1	12.5	1.4	Child can stand and walk round cot; is active, merry, and plump; general condition excellent; slight signs of rachitic stigmata remaining in head and chest.		
9. V. J.	F.	1?.5.17 (2.8)	5.12.19	31	0	8.1	12.7	4.6	Very backward; cannot sit alone and can hold head up only for a short time; body limp and helpless; child pallid and feeble; lies passively in cot and takes no notice of being handled; slight signs only of rickets; fontanelle open; 13 teeth.	As for Case 7.	Three attacks of scurvy, at 16, 20, and 24 months. Ear discharge at 9 months. Tuberculous finger 12 to 15 months.
			3.3.20	34	3	9.5	13.0	3.7	Begins to sit up; activity much improved; uses arms and legs, and rests on elbows. Interest shown in her surroundings; colour improved.		
			14.5.20	36	5	10.8	13.1	2.3	Can stand up in cot; tissues firm; child active and intelligent; general development as for a child of 18 months; fontanelle almost closed; 16 teeth.		
			1.6.20	37	5½	10.9	13.3	2.4	Beginning to walk; traces only of rickets.		

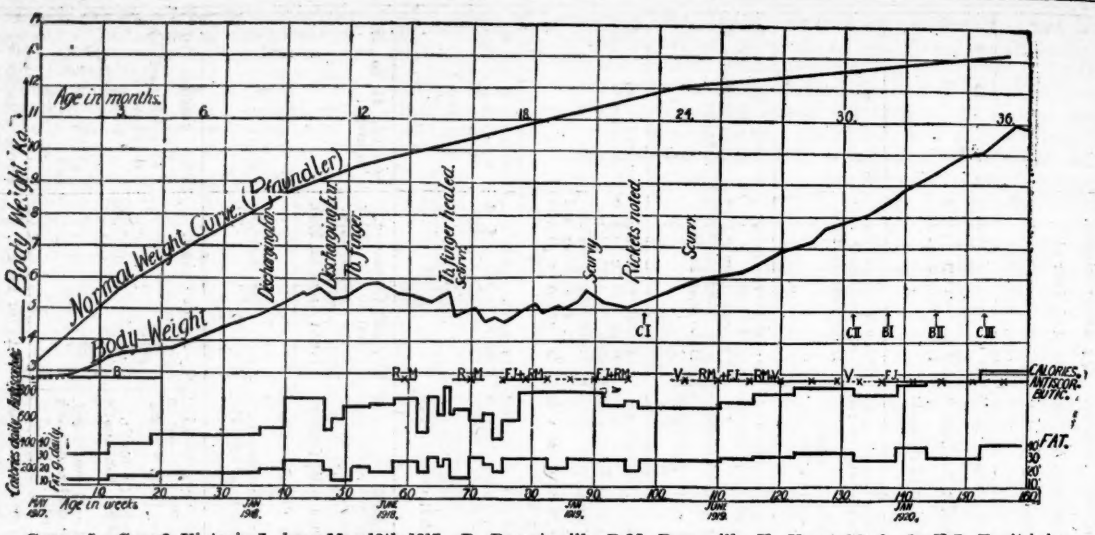

CHART 5.—Case 9, Victoria J., born May 12th, 1917. B.. Breast milk. R.M., Raw milk. V., Vegetable food. F.J., Fruit juice (raw). C. I, Cod-liver oil with phosphorus given; C. II, cod-liver oil and phosphorus discontinued. B. I, Butter given 10 grams daily; B. II, butter increased to 20 grams daily. C. III, Cod-liver oil given in addition, 10 grams daily.

month of breast-feeding received additions of diluted milk. From 4½ months old her diet was entirely artificial, and until the age of 9 months consisted of milk diluted two-thirds with sugar and cereal. Small amounts of full milk were also given. From 9 to 11 months of age (February and March, 1918) she received full milk and cereal food made with full milk. During the first year of life the weight curve became progressively flatter and departed more and more from the normal.

The second year of life (May, 1918, to May, 1919) was even less satisfactory than the first. The net increase in weight over the whole twelve months was negligible, and amounted to 200 grams, and the year was marked by three attacks of scurvy.

The diet for the first month of this period contained a large proportion of "malt-soup," but in June, 1918, there is a record of full raw milk given for a few weeks, indicating that a scorbutic condition was suspected, although no symptoms are noted in her dossier. The diet then reverted again to ordinary milk and cereal food, until, at the end of August, 1918 (at 13½ months) malt-soup again made its appearance in the diet, with the addition of 100 grams daily of raw milk. In spite of this antiscorbutic addition definite scurvy was diagnosed in September (at 16 months). Fruit juice was given, and the diet was again changed to raw full milk, which was continued, with a short interval, until December, 1918. A cooked diet was then given of whole milk and cereal. Vegetables were included, but in January, 1919 (at 20 months), definite scurvy symptoms were again noted in the form of swollen gums and swollen and painful legs. Raw apple juice and lemon juice and raw milk were given again, and the raw milk was continued until the beginning of March (1919). The acute symptoms had then disappeared, so the raw milk was again discontinued and replaced by malt-soup. At the beginning of May (the child was then 24 months old) definite scurvy was diagnosed for the third time, and on this occasion was more severe in character than on the two previous occasions. There were skin haemorrhages on the back and thigh, the thigh was sensitive and painful, the gums were swollen, there was oedema of both feet, and haematuria.

Note was made of rickets at 22 months, the child had only five teeth, and was evidently very backward.

The curative treatment of this third attack of scurvy consisted of lemon juice, green vegetables, and raw full milk, which on this occasion formed a large proportion of the total diet, and was continued for nearly six months. The child began to grow, and at 2½ years had increased from 5.9 to 7.9 kg. in weight. At this period the child was seen for the first time, and her condition is summarized in the table. She was 2½ years old, and, although very backward in general progress, showed no gross signs of rickets. The head was well ossified and properly developed, the fontanelle was wide but not soft, the chest was rather contracted, but the abdomen was flat. The legs were long and straight and the body well proportioned, the arms were very weak, and the wrists showed enlargement. The muscular power was extremely feeble, and the head could only be held up for a few minutes. The child was lethargic, unintelligent, and inactive.

The effect of a combination of antiscorbutic and fat-soluble accessory factors is well shown in the progress made when raw lemon and orange juice 10 to 20 grams, and 10 to 20 grams of butter were added to the diet (see Table). Later 20 grams daily of swede-turnip juice was substituted for orange juice. In six weeks the child was trying to sit up; in three months she could do so, and was trying to stand; she also showed activity and intelligence in many ways. In five months she was beginning to walk with help.

This case is in many ways the most instructive of the series. First, it shows very clearly the inhibition of growth and progress imposed by a scorbutic or pre-scorbutic condition, even when definite symptoms were absent. In the second place, the history of the second year of this child's life shows that scurvy must not be considered as cured when the severe symptoms are no longer obvious. The curative treatment for the first two attacks was applied for a short period and discontinued when symptoms had disappeared; on both occasions a speedy relapse took place. Only after the third attack of scurvy was the antiscorbutic treatment continued for a prolonged period, when the child showed by its growth that the constitutional disturbance was being really rectified.

CONCLUSIONS.

It is not possible to make generalizations upon the history of nine children, but the following provisional conclusions are stated here in the hope of suggesting further research in this field:

1. The addition of antiscorbutic juices and of fats containing the fat-soluble accessory factor was found to have a satisfactory result in stimulating growth and progress of nine very backward children, of ages varying from 12 to 31 months. The condition of these children before treatment showed that development had been retarded for many months.

2. The diet allotted for the children did not appear to be lacking in calories, but there was evidence that their food had been deficient in antiscorbutic principle and in milk fat.

3. It appears that deficiency of antiscorbutic material in diet had been an important cause of failure to grow. Eight of the nine children gave a history of previous attacks of definite scurvy, and two (Cases 4 and 6) showed bony deformities which were probably of scorbutic origin.

4. It is not possible to determine whether the beneficial effect observed after enriching the diet with two accessory factors is to be attributed to the extra antiscorbutic or to the extra fat given; probably both factors were concerned. In some instances—for example, Cases 4A and 8—improvement in growth and remission of rachitic symptoms were observed after addition of antiscorbutic material to a diet already containing a fair allowance of milk fat.

5. The cases studied indicate that the child's capacity for recovery is considerable when conditions of deprivation are rectified; the normal standard could be approached in six to twelve months, even after twenty-four months of retardation in growth and progress.

In conclusion, our warm thanks are due to Dr. G. Riether, Director of the Landes Zentral Kinderheim, for hospitality afforded to us in the wards of the institution and for permission to publish these observations. We also wish to express our indebtedness to Primarius Dr. M. Zarfl, physician-in-charge of the section in which these observations were made, for his continued co-operation and sympathy with us in our work.

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THE ETIOLOGY OF RICKETS.*

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AT the present time there are two different schools of thought on the subject of the etiology of rickets—namely, the dietetic and the hygienic, the former considering that a defective diet is the cause of this disease and that lack of fresh air, sunshine, and exercise is only a contributing factor, which increases the severity of the disease but never causes it if the diet is satisfactory. The latter claim that rickets is directly due to a hygienic defect. Many years before vitamins were thought of, Cheadle[1] brought forward many convincing arguments in favour of the former supposition. He pointed out that the disease was very rare in breast-fed children, and that when it did occur it was almost invariably due to prolonged lactation (with deficient secretion of milk) and the addition of starchy foodstuffs as a supplement. He considered that fat insufficiency was the chief cause of rickets, but also recognized the value of suitable protein in the diet as a preventive and the injurious effects caused by an excess of carbohydrates in young infants. He claimed to have cured rickets by merely correcting the diet of infants, and was of the opinion that cod-liver oil, though useful in some cases, was not an essential form of treatment, and that in other cases—for example, those infants who had indigestion—its use was sometimes harmful.

Findlay, in 1906, expressed the opinion that insufficient exercise was the cause of rickets. His experiments with Paton on pups appeared to have strengthened his views, and recently[2] he has published a small number of cases which are intended to show that greater curative effects are obtained by massage and electricity than by improved dietary and administration of cod-liver oil, etc. Noël Paton and Watson, as a result of their experiments, came to the conclusion that an unclean environment produced rickets in young animals owing to microbic infection. They suggested that a non-specific microbe such as McCarrison has shown to be the cause of goitre was to blame for the disease. Hess,[3] by reason of his dietary experiments on negro children, was opposed to the vitamin theory, and noting, as most other observers of the disease have done, that rickets was most active in winter and tended to improve in spring and summer, suggested that lack of sunshine was the cause of rickets. He demonstrated by a further series of experiments that sun baths in spring and ultra-violet rays in winter had a curative effect on negro infants suffering from this disease.

Rickets in Australasia.

Before discussing the various theories the writer would like to give a short description of rickets as it occurs at the Antipodes, as he considers that it serves to throw a certain amount of light on this vexed question. In former times the existence of rickets in Australasia was denied, and its absence was quoted as an argument against the dietetic origin of this disease. Such, however, is far from the truth, and it is now recognized that rickets, although not nearly as prevalent as it is in Europe and America, is by no means uncommon. It is present, however, in a much milder form—marked deformity of bones is extremely rare, and spasmophilic conditions, such as tetany and laryngismus, which are associated with advanced forms of rickets, are conspicuous by their absence. The common symptoms observed in Australia and New Zealand are slight beading of the ribs, delayed dentition and closure of the fontanelle, a protuberant belly, sweating of the head, and restlessness at night. Anaemia and malnutrition (although occasionally the fat form of rickets is seen) are usual. The muscles are flabby and wanting in tone and the ligaments are relaxed. A tendency to the development of catarrhal conditions of the mucous membranes, such as bronchitis and diarrhoea, is not infrequent. These symptoms are practically identical with those described by Cheadle as existing among the better classes of the population in England.

An analysis of forty cases seen in private practice in Auckland may be of some interest:

Age.	Cases.	Percentage.
Under 6 months	1	2.5
6 to 12 months	21	52.5
1 to 2 years'	16	40.0
Over 2 years	2	5.0

The cases seen over the age of 2 years were aged 2 years and 3 months and 3 years and 2 months respectively. The latter case presented marked deformities of the bones of the upper and lower limbs and chest wall, and was the only case of such marked deformity in a New Zealand born child that I have ever seen.

Diet.—In every case the diet was more or less unsatisfactory as regards insufficiency of milk and excess of starchy foods. None of the cases were wholly breast-fed, but 8 (20 per cent.) were partly on the breast, supplemented chiefly with starchy foods. It is noteworthy that 5 (62 per cent.) of these partly breast-fed infants were over the age of 1 year. One infant of 9 months of age from a country district developed rickets on a diet of a patent food and condensed milk, but his twin sister, fed on exactly the same lines, showed no sign of rickets.

Season.—Roughly dividing the year in Auckland into five winter months (which is a very liberal allowance) and seven summer months, it was found that 29 (72.5 per cent.) of these cases were brought for advice during the summer months and 11 (27.5 per cent.) during the winter. These figures tend to show that the increased activity of rickets in winter noticed in other countries does not occur in New Zealand. The probable explanation is that, advice being sought for the catarrhal complications of this disease, diarrhoea in this country is a more marked feature than bronchitis, which, as is well known, tends to occur chiefly during the winter season.

Hygiene.—The hygienic condition of all these patients was good.

Symptoms.—No case was included in the above series of cases in which beading of the ribs, delayed dentition and closure of the fontanelle were absent. Marked sweating of the head and restlessness at night occurred in the majority. All the cases, without exception, were below normal weight. Slight deformity of the chest, such as pigeon-breast or the presence of Harrison's sulcus, occurred in a few of the cases, but bending of the long bones of the limbs, with noticeable enlargement of the epiphyses, was only noted in the one case already mentioned. None of the cases showed signs of laryngismus or tetany.

A comparison between rickets as observed in Europe and Australasia would tend to show that the early symptoms this disease show great similarity, but that the course is much more benign at the Antipodes than in older parts of the world. A little consideration on the subject should clearly demonstrate why such is the case. There is a wide difference between the environment of the child in Australia and New Zealand and that which exists in the slums and tenement houses of the large cities of Europe.

In Glasgow or London, for instance, among the young children of the poor during the long winter months the hygienic conditions of life of the puppies cooped in a laboratory is almost exactly reproduced. Close confinement, with its attendant evils of insufficient fresh air, sunshine, and exercise, naturally tends to intensify the symptoms of a metabolic disorder. For normal growth and development in an infant we know that a well-balanced diet is an essential, but other factors are also necessary. For proper development of muscles exercise is an important feature. The ceaseless activity during waking hours, which is characteristic of all young animals, is probably a necessity for normal development of both muscles and bones. Similarly the functions of the rapidly developing cerebro-spinal and sympathetic nervous systems of the infant would appear to be stimulated, through the eyesight, by an environment which permits of a variety of objects of interest. Contrast the lot of the infant of the slums with that of the child in the same class of society in Australasia. The former for six months of the year is kept for the greater part of the twenty-four hours in a dingy room, in which sunshine, fresh air, and cleanliness are all lacking. Excessive clothing, hampering the free movement of the child, is not uncommonly applied by the parents to maintain warmth, and, owing to the tendency of these unfortunate children to bronchitis, the mother is often afraid to take them into the open for fear they should "catch cold." In Australasia the winters are short and sunshine is abundant, and in consequence infants are enabled to spend a great deal of their existence in the open air, to exercise their muscles freely, and increase their powers of observation. The occurrence of this disease in Australasia would tend, then, to show that absence of exercise and sunshine have no causal relation

* Some prefatory matter containing a review of recent experimental work by Hopkins, Osborne, and Mendel, Mellanby, and others (1911–1918), and a few other paragraphs have been omitted owing to exigencies of space.

to rickets. The one feature common to all cases seen by the writer in these countries is some dietary defect, and from this he concludes that rickets is a dietetic disease.

The chief difficulty in accepting a purely dietetic theory for the causation of rickets is the following well-known fact. If a number of children are placed under the same hygienic conditions and fed on a similar ill-balanced artificial diet three things may occur:

(1) The infant may remain quite healthy and develop normally.
(2) Malnutrition may occur without signs of rickets.
(3) Rickets may appear.

None of the theories so far advanced explains the markedly variable susceptibility to the development of rickets possessed by infants placed under similar conditions of life as regards hygiene and diet. Speaking of infants reared in an institution, Hess[3] recently said the fact that 25 per cent. of the children fed on the same milk would get rickets and the rest would not, showed that there was some individual idiosyncrasy. If we adopt the dietetic theory of rickets we must go further, and be able to explain why a similar diet given to three infants is capable of producing atrophy in one, rickets in another, while a third child who was similarly treated remained in good health.

Cautley[4] has endeavoured to explain why the atrophic infant shows no sign of rickets by stating that there is antagonism between the two diseases, the atrophic infant not having "sufficient anabolic vitality for the production of the characteristic proliferative changes in the cartilages and bones." Be that as it may, the fact remains that atrophic infants rarely show signs of rickets. In both these affections, which may be presumed to be due to dietetic causes, as human milk is a specific remedy for one and a prophylactic for the other, there are profound metabolic changes, yet the clinical signs are markedly different. In looking for an explanation which will satisfy all the peculiarities of rickets as shown by laboratory experiments and clinical observation, including the results of therapy, it appears to the writer that one must go further than to assign either a purely dietetic or hygienic etiology for this disease. The profound metabolic changes which occur in a severe case of this disease can, he considers, be only caused by a disturbance of those organs which control metabolism in the young. In the further study of secretions produced by the endocrine organs — "the regulators of metabolism," to quote McCarrison[5]—will perhaps be found the key to open the portals which at present hide the mysteries of this disease. If a deficiency of endocrine secretion is the direct result of an unsuitable artificial diet, and the latter is also the chief factor in the causation of rickets, it would perhaps not be illogical to conclude that this disease is the effect of a deficiency of the secretion produced by one or more of these organs. Of the various endocrine organs a deficiency of whose secretion is responsible for the production of rickets I suggest that the thymus gland is the most probable. McCarrison found that in birds and monkeys experimented on with certain diets "the thymus atrophies intensely," but he has no data with regard to the merely scorbutic diet. A plausible reason for considering that rickets is due to thymic insufficiency is that the age incidence of the active growth of the thymus and of the disease known as rickets is almost identical. The normal thymus does not increase in size after the age of 2 years, and rickets as a progressive disease is usually limited to that age. Surely these significant facts are something more than a mere coincidence. Then again the peculiar idiosyncrasy to rickets may better be explained by this theory than any other. Still[6] has drawn attention to the wide discrepancy between the weight of the normal thymus gland in infants as noted by different observers, and it is not unreasonable to suggest that Nature has been more lavish in her endowment of some infants with a large and active gland than in others. If such should prove to be the case, we can more easily explain those cases (known to all observers) which, in spite of an ill-balanced diet containing (theoretically) insufficient suitable protein or fat and an excessive amount of carbohydrate, can still remain healthy for a considerable time, because, owing to a highly efficient thymus, a sufficiency of secretion is produced to prevent the onset of this disease. In advanced cases of rickets the spasmophilic manifestations which occur owing to defective hygiene are possibly due to the atrophy of other endocrine organs such as the parathyroids. The condition of marasmus or infantile atrophy, which is said to be antagonistic to rickets, may possibly be due to a deficiency of the secretion of other endocrine organs.

The writer has endeavoured to show that rickets is primarily a dietetic disease, being due to either an insufficiency of fresh animal food in an artificial diet, or to defective assimilation (as a result of digestive disturbance) of such food. It remains only to express an opinion as to which of the two great classes of foodstuffs, fat or protein, are responsible for such defective metabolism. As a result of clinical study and a consideration of the experiments of others I have come to the conclusion that a deficiency of suitable protein is the probable cause. The experiments of Paton and Watson would appear to show that in pups rickets is not caused by feeding on skimmed milk, and though I have frequently fed infants on fresh and dried separated milk for several weeks I have never seen rickets occur as a result. The beneficial effects of cod-liver oil in this disease, both as a prophylactic and a curative measure, would at first sight appear to be a stumbling-block to the acceptance of this theory. I know, however, of no evidence that the benefit derived from this form of treatment is due to the fat of the cod-liver oil, alone or in part; and further investigation may show that the extractives contained therein possibly serve as metabolic stimulants or regulators.

Summary of Conclusions.

1. That rickets is due to a deficiency of fat-soluble A vitamin in the diet has not been proved.

2. It is primarily due to a diet actually deficient in fresh animal food, probably suitable protein, or to a disturbed digestive condition which prevents the assimilation of the same.

3. The striking metabolic changes in rickets are due secondarily to a deficiency of secretion of one or more of the endocrine organs and probably chiefly of the thymus gland.

4. Confinement in young animals, with its attendant evils of lack of sunshine, exercise, and cleanliness, are important factors in increasing the severity of the disease.

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DIAGNOSIS AND TREATMENT OF PERFORATED DUODENAL ULCER.

FOUNDED ON FORTY-ONE CONSECUTIVE CASES.

BY

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ON looking over the records of my work in the Aberdeen Royal Infirmary during the years 1914–1919 I was struck by the number of cases of perforated duodenal ulcer that came under my care—namely, 12 in 1915, 9 in 1916, 8 in 1917, 9 in 1918, and 3 in 1919, or 41 in all. As this seemed much in excess of previous years, I thought it might be of interest to record certain points in the clinical notes of the cases. Owing to the greatly reduced staff in the hospital during that time, the only assistant available for me was a senior student who had many duties to perform, hence the notes are not so detailed as I would have liked.

Perforation is the most serious symptom that can occur with duodenal ulcer; it may take place in both acute and chronic ulcer at practically any age. Perforation has been reported in a child of two months and in a woman aged 77 years, but such cases are exceptional. At the same time the fact must be recognized that duodenal ulcer and its complications is now being found at a much earlier age than was at one time thought to be probable. Perforation is not only the most serious but also the most frequent complication, but the percentage of cases in which it is said to occur varies greatly. Osler, in his *Principles and*

Practice of Medicine, stated that perforation occurs in 6½ per cent. of all cases. Douglas, in *Surgical Diseases of the Abdomen*, says "The frequency of perforation is given as 43 per cent. (Chvostek), 69 per cent. (Collin), and 50 per cent. (Robson)." In the collected papers of the Mayo Clinic (1905–1909) it is stated that in 272 operations for duodenal ulcer perforation was found sixty-six times, and that sixteen of these were acute. The further fact, however, must be apparent, that statistics are not accurate, as there are many cases of duodenal ulcer diagnosed either not at all or wrongly. Considering the now acknowledged prevalence of duodenal ulcer any light that can be thrown upon its serious complications must be of value.

Frequency.

The ratio of men to women suffering from duodenal ulcer is variously given as from 5 or 3 to 1. In the present series of cases of perforation the ratio was 40 to 1, the one being the only case of perforation in a woman that I have ever seen. From this, and from a study of other hospital statistics in Aberdeen, I get the impression that duodenal ulcer in the female is very rare. Some observers account for the greater frequency of perforation in men by the fact that men are more liable to trauma, and that the nature and quantity of the food taken is different.

Age.

Most statistics state that duodenal ulcer is commonest between the ages of 20 and 60, that is in cases operated upon, but as the majority of the cases had had symptoms for months or years, an earlier age must be taken for the incidence of ulcer. In the present series the youngest was a lad of 17, the next a woman of 19, the oldest a man of 63. Of the 41 cases 26 occurred between the ages of 40 and 60, 9 between 20 and 40, and 4 over 60. L. J. Hammond[1] reports 14 cases of perforation (12 males and 2 females), and states that the greatest number occurred between 20 and 30.

History of Previous "Indigestion."

In the majority of cases of perforation there is a history of definite "indigestion" for months or years. In three of the present series there was no previous history of trouble, all stating that they felt perfectly well until the onset of the symptoms. In the bulk of the cases under review in which previous symptoms were present, there was a period of exacerbation previous to the perforation varying from a few hours to a week. This seems to be the usual experience, and differs from that of L. J. Hammond, who reported 14 cases to show the absence of clinical symptoms during the stage before perforation. Investigation of the previous history of indigestion usually gives a fairly typical picture of duodenal ulcer—namely, pain and discomfort coming on two to three hours after a meal, slightly relieved by vomiting and the eructation of gas and completely relieved by the taking of food, also the characteristic night pain; practically all the cases admitted going to bed with milk and biscuits close at hand.

In the present series the previous history of indigestion varied from thirty years to several months, though in one case the history was for one week only.

Dissemination of Fluid after Perforation.

Perforated duodenal ulcers have been divided surgically into three main classes, namely:

1. Cases in which the escape of intestinal contents is so profuse as quickly to flood the whole peritoneal cavity.
2. Cases in which the escape is not so profuse but yet constant, and areas of the general peritoneal cavity become more gradually filled, usually in a very definite sequence, one part after another.
3. Chronic perforation, in which the leak is so small and gradual that it leads generally to the formation of a localized abscess, owing to the limiting adhesions which have time to occur.

The cases in the present series belong to classes 1 and 2. In none of the cases was there any appearance of a localized affection. The second class of case was by far the most common. There was nearly always an interval during which the extravasated contents were limited to a particular region of the abdomen. Frequently the course of the extravasation can be followed clinically by noting the points of most acute tenderness, which seem to correspond to the spreading margin of the fluid. As the fluid leaves the duodenum it tracks along the shelf of mesocolon towards the right kidney pouch, then downwards either on the outer or inner side of the colon to the right iliac fossa, and thereafter flows into the pelvis. When this is full the fluid gradually spreads up the left side, and finally, in an untreated case, fills the whole peritoneal cavity.

Symptoms of Perforation.

As regards the symptoms at the onset of perforation, practically all the cases under review told the same story, and when to this was added the previous history of indigestion, there was little doubt as to the nature of the case. The onset is, to my mind, very characteristic—a very sudden attack of severe, agonizing or excruciating pain in the epigastrium, which tends to "double one up" and gives the feeling of impending death. This is quickly followed, in the majority of cases, by severe prostration or collapse, the degree of which possibly depends upon the amount and rapidity of spread of the escaping fluid. In my cases the onset was variously described as "like an electric shock," "severe burning," "a terrible spasm," "knife-like," "absolute agony," etc. I was struck by the number of patients who spontaneously stated that the pain "doubled them up." The sudden pain is accompanied by respiratory distress, in that the respirations are short, rapid, and difficult, and this, along with the sense of impending death, makes the expression one of great anxiety; the face becomes pale and perspiration stands out in beads on the forehead. The upper part of the abdomen is usually "board-like" on palpation and excessive tenderness is present, especially in the epigastrium.

These symptoms may be looked upon as the first stage in the condition, and clearly indicate some grave catastrophe, and, as already stated, when taken with a previous history of "indigestion," should leave no doubt as to the diagnosis. In this stage there is usually some quickening and weakening of the pulse, the temperature is subnormal, and the patient may or may not vomit. In twelve of my series vomiting was noted at the outset, but it may have been a symptom in many more.

This first stage is usually of very short duration, and unfortunately medical men seldom have the opportunity of seeing it as the patient soon passes into what may be termed the second stage, which is characterized more by tenderness and muscular rigidity. In this stage there may be recovery from the collapse, the pulse and temperature may be normal, there may be little complaint of pain, and the patient may look comparatively well, although in most cases there is still a suggestion of anxiety or restlessness in the expression. Examination of the abdomen reveals very marked rigidity of both recti and usually difficulty in taking a long breath; breathing in the majority of cases is costal. There is usually also marked tenderness a little to the right of the mid-epigastrium, rather below and internal to the tip of the gall bladder—to the right of the middle line above the umbilicus. At this stage there may not be much alteration in the temperature or pulse rate, but as a rule the respirations remain quick; 35 cases in my series had a respiratory rate of from 25 to 30.

Obliteration or diminution of liver dullness must not be taken as a necessary sign of perforation. Only in two cases was the liver dullness found to be obliterated; in five it was diminished.

The time occupied by the first and second stages is usually from one to two hours, and the third stage develops rapidly. The cases come under observation most frequently during this third stage, when diagnosis has become more difficult. The fluid has usually found its way to the right iliac fossa and often into the pelvis, and it is now that we find the signs of spreading "peritonitis"; the pulse rate increases and the temperature rises, there may be slight distension of the abdomen, and the tenderness becomes more general; although excessive tenderness may still be made out to the right of the epigastrium, the tenderness is frequently most marked at this time in the right iliac fossa, and this observation may lead to a diagnosis of acute appendicitis. The phenomenon is accounted for by the fact already mentioned, that the point of greatest tenderness follows the spreading margin of the extravasated fluid. The board-like rigidity has

probably spread widely from the epigastrium, but may be still especially marked on the right side. In a few cases vomiting may persist throughout this stage, and when added to the other symptoms may lead to a diagnosis of acute intestinal obstruction. In 7 of the 41 cases it was noted that the bowels had moved freely after the onset of acute symptoms.

As the fluid spreads and the symptoms increase in severity the pulse rate gradually quickens, with or without an accompanying rise in the temperature; but, in fact, the temperature usually now begins to fall. The respirations become more rapid, the abdominal distension becomes more marked, and the patient gradually passes into what may be termed the fourth or moribund stage, characterized by lividity of the face, a rapid thin pulse, and a cold and clammy condition of the skin.

Diagnosis.

The diagnosis of perforation is easiest in the first and second stages, before there is much distension and before the physical signs reach the right iliac fossa. If, as is usual, a previous history of indigestion resembling gastric or duodenal ulcer is given, then the onset of excruciating pain in the epigastrium, often described as like the outpouring of boiling fluid, with marked respiratory distress, rigidity of the upper part of the right rectus muscle, and marked tenderness to the right of the epigastrium, makes the diagnosis of perforation pretty certain.

At later stages various other conditions may be simulated, but at all events the symptoms point to an acute abdominal condition requiring early surgical intervention. In two cases in the series the initial incision was made in the appendical region, and on one occasion the diagnosis of renal colic delayed operative interference for twelve hours.

Prognosis.

All statistics go to prove that the earlier the case is operated upon after perforation the greater the chance of recovery, and there is no doubt that within recent years the mortality has decreased greatly, due partly to the cases being recognized earlier, and partly to improved technique. In the present series of 41 cases there were 5 deaths, and, for reasons to be seen later, in the cases subsequent to January, 1916, there were 29 cases with 2 deaths. Taken all over, the time of operation after perforation varied from three hours to three days, the average being a little over seventeen hours, and in 14 cases the time was twenty-four or more hours after perforation.

Of the three fatal cases occurring during 1915 the first was that of a male, aged 48, who, twenty-four hours previous to operation, was suddenly struck by a sudden severe pain in the right costal region and also in the right iliac region, spreading rapidly over the whole abdomen. For one week previous to this he suffered from discomfort in the upper abdomen. There was otherwise no history of indigestion. Before admission to hospital he was given opium pills. The physical signs were those of an "acute abdomen." At operation a perforation of the first part of the duodenum was found, and in spite of the usual treatment, including drainage, he died in five days with symptoms of acute peritonitis.

The second was a male, aged 36, with symptoms of acute abdomen for eight hours—acute pain, sickness, and vomiting of "coffee grounds." Although the abdomen was full of fluid resembling stomach contents, no perforation could be found, and he died six days later, in spite of epigastric and suprapubic drains. Unfortunately, no *post-mortem* examination was made to confirm the diagnosis, but the history and course of the case left little doubt as to the condition present.

The third fatal case during 1915 was that of W. B., aged 52, who was admitted to hospital in a moribund condition, having perforated three days previously, and for whom the only treatment carried out was the insertion of a suprapubic drain under local anaesthesia.

During the years 1916–1919 there were two fatal cases, one in 1916 and one in 1918, out of a total of 29—that is, 7 per cent. mortality. The first was a lad of 21 years, whose acute symptoms had been present for fully forty-eight hours before admission. He gave a history of sudden pain and collapse, with vomiting of brown material, and later showed the presence of blood in the stool. On admission he looked very ill. His pulse was 128, respirations 32, and temperature 100°. At operation a well marked perforation of the first part of the duodenum was found close to the pylorus. The perforation was sutured, the abdomen washed out, and a suprapubic drain inserted. He died on the seventh day after operation.

The other fatal case was that of W. F., male, admitted twenty-nine hours after the onset of acute symptoms. Previous to admission he was given first 5 oz. of castor oil, followed in about seven hours by 5 grains of calomel and later by several soap and water and turpentine enemata, without result! On admission he showed the symptoms of an acute abdomen in the final stage and justifiable interference was regarded as being limited to suprapubic drainage under local anaesthesia. He died within twelve hours of admission. In this case no *post-mortem* examination was granted and the diagnosis was made from the history and course of the case.

Treatment.

All authorities agree that immediate operation offers the only chance of cure and the best chance of recovery. In the present series all were cases of free perforation, no evidence of localization of any kind being present. The various problems of treatment can be divided into four distinct sections or steps—namely, (1) the treatment of the perforated ulcer, (2) the treatment of the peritoneal cavity, (3) whether or not drainage should be employed, (4) should gastro-enterostomy be performed?

It is not my intention to discuss all these, but merely to state what steps were taken in the series of cases quoted.

1. In every case except two the perforation was closed by purse-string suture, frequently reinforced by interrupted cross sutures. In none of the cases was either excision or cauterization performed.

2. The general opinion is that the peritoneal cavity should not be irrigated. My technique is as follows: Having sutured the perforated ulcer, I make a suprapubic opening sufficiently large to allow of the insertion of an average sized Keith's drainage tube. I then retract and lift up the edges of the epigastric incision, and gently pour into the abdomen pints of normal saline solution. With my hand inside the abdominal cavity I make sure that the periduodenal regions, especially under the liver, the right renal pouch, and the right colic regions, are well flushed, and siphon off what gathers in the pelvis through the Keith tube. The irrigation is continued until the fluid comes out of the pelvis quite clear. The epigastric incision is then closed, and the suprapubic drain removed without any attempt being made to empty the peritoneal cavity. The suprapubic wound is closed, and the patient subsequently treated in the Fowler position.

During 1915, with 12 cases and 3 deaths, the above technique was not the routine one, the process of "mopping" being used in several; but subsequent to January, 1916, irrigation has been used in all the cases. During 1916 and 1917 the suprapubic drain was left in for twenty-four to forty-eight hours, but subsequent to 1917, being struck by the small amount of fluid which drained away, I closed the suprapubic wound at the time of operation. From 1916 to 1919 inclusive I treated 29 cases, with 27 recoveries, and knowing the details of the two fatal cases, I do not think anyone could say that any other method of treatment would have saved them.

As regards the performance of gastro-enterostomy, it is my custom to postpone this until a later date. In the hospital class of patient it frequently appears to be unnecessary, as in only four of the series have I been asked for further advice some months after their discharge. Gastro-enterostomy then cured their symptoms.

In a recent textbook on operative surgery one of the steps in the operation for perforated duodenal ulcer is described as follows:

"Provide for drainage through the primary incision, through a special opening made in the right loin just below the last rib, and where there is much peritonitis provide pelvic drainage through an anterior wound and keep the patient in the Fowler position."

It was this difficulty of drainage that led me to try irrigation, and I was glad to read in Hertzler's *The Peritoneum*, under treatment of acute general peritonitis, the following:

"There is one condition in which irrigation seems rational. In instances where large amounts of fluid have been poured into the peritoneal cavity it seems that irrigation may be useful by removing mechanically foreign bodies which have escaped from the intestinal lumen. There is no doubt that peritonitis is much enhanced when foreign bodies enter along with the bacteria present. If the manual force of a stream of fluid can be made to remove them before inflammation has been set up the irrigation may be beneficial."

To my mind the statistics I have here given warrant a continuance of the irrigation method.

REFERENCE.

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BLUE SCLEROTICS AND BRITTLE BONES, WITH MACULAR ATROPHY OF THE SKIN AND ZONULAR CATARACT.

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WHEN the sclerotics are abnormally thin, as in buphthalmus, and even locally after scleritis, the white part of the eye assumes a bluish colour, because the dark uvea shows through. But a bluish colour of the whole sclera may be congenital, and is most often found in connexion with bones so slender and fragile that fractures are occasioned by the slightest cause—as, for example, slight blows or fall from a small height.

The description of the disease "blue sclerae and tendency to fracture" was published for the first time by Eddowes[1] in 1900 in a short report in the BRITISH MEDICAL JOURNAL, which, however, gives an almost complete description of the disease. Eddowes saw the disease in a father and his daughter, and he is of the opinion that the blue sclerae, as well as the tendency to fracture, are due to an inherited defective structure of the fibrous tissue of the body. In 1908 Peters[2] describes a family of four generations, of the 11 members of which 10 had blue sclerae, and he establishes the fact that the disease is congenital and hereditary. In a subsequent report Peters[3] mentions that fractures, too, often occurred in this family.

Since then several pedigrees have been published of families in which blue sclerae and the tendency to fracture were found to be inherited. In this way Stephenson[4] mentions, in 1910, four generations, and Harman[5] a fifth generation of a family, of the 55 members of which 31 had blue sclerae.

Burrows[6] found in 1911, in a family of 24, 13 affected with blue sclerae and 9 with the tendency to fracture; Adair Dighton[7] found among 14 persons 9 with blue sclerae; Cockayne[8] 6 cases in a family of 17 members. Van der Hoeve and de Kleyn[9] report two pedigrees in 1918; in one, 10 persons out of the 22 members of the family have blue sclerae, as have, in the other, all the 6 members of the family, while 10 and 5 respectively have the tendency to fracture. Finally, Freytag[10] has recently mentioned a family of 18 members, 11 of which had blue sclerae.

In summing up all these cases it will be seen that among 156 persons, 76—that is, about one-half—had blue sclerae; and among 52 persons, whose bones were examined in addition to the symptoms of the eyes, 24—also about one-half—had the tendency to fracture. If we look at the published pedigrees, for instance, at ours, the conditions of heredity seem to be of such a nature that the whole matter seems to be in accordance with the view adopted by Groenow,[11] that the anomaly is inherited as a dominating quality according to Mendel's theory.

Besides blue sclerae and tendency to fracture, other anomalies are described in these patients. One of the most frequent seems to be deafness. Van der Hoeve and de Kleyn,[9] who were the first to describe this symptom in connexion with the blue sclerae, found hardness of hearing or deafness in all the members of the two families in question who suffered from blue sclerae and tendency to fracture. Bronson[12] found deafness in 7 cases, Voorhoeve[13] the same in 4 cases. Late development of the teeth is further mentioned by Crocco,[14] syndactyly and astigmatismus by Van der Hoeve and de Kleyn,[9] embryontoxon by Peters,[2] haemophilia, congenital vitium cordis, palatum fissum and rachischisis by Voorhoeve,[13] projecting frontal and occipital bones by Bronson,[12] and a tendency to luxations and subluxations by Freytag[10] and Behr.[16]

As regards the cause of the disease, a great deal seems to indicate that this is due to an inherited anomaly of the mesoderma. The blue colour of the sclerae is, as mentioned above, due to the sclerotic being so transparent that the uvea shows through more than normally; the transparency, in its turn, is due to the sclerae being thinner than usual, as Buchanan[20] proved by measuring an enucleated eye, the sclera of which was only one-third of the ordinary thickness.

The tendency to fracture is due—as is proved by several examinations by *x* rays (Stenvers in Van der Hoeve and de Kleyn's report,[9] Freytag,[10] Crocco,[14] Reye[21])—to thinness of the bones and defective calcareous development. Further, a relative thickening of the compacta at the expense of the spongiosa is found—probably a result of former fractures—in addition to older and newer fracture lines as well as flexures of separate bones and of the whole bony system.

The deafness is, in some cases, due to oto-sclerosis (Bronson,[12] Crocco,[14]) and in other cases to labyrinthic disease (Voorhoeve[13]). Stenvers (loc. cit.) found on examination by *x* rays that the labyrinthic parts were covered by a thick calcareous substance, so that the deafness in this case was due probably to a secondary disease of the labyrinth as a consequence of disturbances of nutrition caused by the osseous affection in this region.

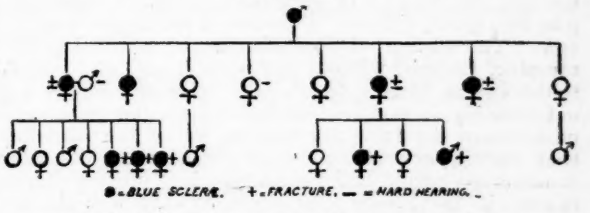
The real cause of all the symptoms is quite unknown as yet. Some authors think that it is due to disturbances of the internal secretion (Bolten,[15] Behr,[16] Hoffmann[17]), while others connect the disease with inherited syphilis; but none of these theories has, however, yet been proved.

We shall now bring forward a case of this rare disease which has not, to our knowledge, yet been described in this country.* The case is more interesting because the patient suffers from a cutaneous disease, which perhaps is connected with the other symptoms, and which has not before been described as part of this disease.

DESCRIPTION OF DISEASE.

Condition of Heredity.—The existence of blue sclerae and the tendency to fracture in all the other members of the family is illustrated by the accompanying pedigree, composed according to information given by the patient. It has only been possible to examine one member, a maternal aunt; she had typical blue sclerae, was dull of hearing, and had formerly had several fractures, but presented no changes in the skin.

Pedigree.



Anamnesis.—The blue colour of the sclerae has existed as long as the patient remembers, and does not seem to have changed in the course of the years. She has not noticed any subjective symptoms of her eyes, and has not complained of an impaired eyesight.

The patient states that she had broken her right upper arm twice, her left forearm once, both her legs once, her right collar-bone once, and one of her ribs once. Each fracture had occurred after a very slight trauma. The patient is not able to give any more detailed information about these repeated fractures, the last having occurred at the age of 13. Subjective ear symptoms have not been observed.

Three years ago—in summer time—brownish spots as big as a pea began to appear on the neck. They grew in the course of the winter, and other spots of the same nature as the first ones continued to appear. From that time cutaneous affection has spread slowly, developing especially in winter, while the disease has in summer been rather stationary. There has been no itching, pains, or paraesthesias. The state of the general health has been good. There have been no symptoms from the lungs or heart and no febrilia.

OBJECTIVE INVESTIGATION.

The patient is 23 years old, unmarried, the daughter of a cottager. Weight 35 kg., height 142 cm., the distance between the finger-tips at outstretched arms 152 cm.

Eyes.—The eyelids are natural, the conjunctivae free from injection. The corneae have distinct arcus juvenilis above and below, otherwise normal. Javal: 3.00 (0°) above, on the left; 3.00 (170°) above, on the right.

* A case of osteogenesis imperfecta congenita with blue sclerae, described by Johannesen and Eiken in *Hospitalstidende*, 1919, No. 7, should, however, perhaps be referred to here.

Corneal radius horizontally is 7.7 mm., vertically 7.3 mm. Visual acuity, on right, 6/9 Am. 200 (15°); visual acuity, on left, 6/9 Am. 200 (165°). She reads with correcting glasses the finest writing (Jaeger N.1) at a distance of 10 cm.

Both sclerae are of a rather deep grey-blue colour, especially in the foremost part corresponding to the ciliary body, which is sharply outlined through the sclerotics. By transillumination by means of Sach's lamp a deep reddish light is seen peripherally everywhere, while a distinct radially striped shadow of the ciliary body is seen in front. The irises are grey-blue, the pupils normal. By maximum dilatation of the pupils a *cataracta zonularis* is seen on both eyes. Otherwise the refractive media are clear; the fundus of both eyes is normal. The tension is between 10 and 7.5 (Schiötz).

Bony System.—The patient is little and slender, the face flat, the chin small, the shape of the head brachycephalic, the prothesis full. The palpable long bones show no changes except that they are slender, while a considerable kypho-scoliosis, together with a pronounced curvature to the right, is noticed in the dorsal part, with a curvature to the left in the lumbar part and a corresponding deformity of the thorax. Photographs by *x* rays of all the bones, except the skull, did not show any trace of previous fractures. On the other hand, they proved to be but slightly calcareous and on the whole defectively developed.

The Ears.—Both tympanic membranes are red and retracted. The hearing is slightly reduced on both sides, probably on account of a double-sided chronic catarrh of the middle ear. There is no trace of disease of the inner ear, the vestibulary function being normal.

The Skin.—The lower part of the neck and the upper part of the chest are affected with a strange cutaneous disease which appears zonularly. In front there are definite spots varying in size from a millet seed to a farthing, of a greyish purple colour, and of a somewhat irregular or oblong form. The surface is below the level of the surrounding skin, and the veins show through distinctly. At the edge of these parts, which at some places join into great patches, a narrow hyperaemic border is seen. The surface of the skin in the affected parts is atrophic, smooth, without scales or crusts, and the hair follicles seem to be natural. The sebaceous glands come out strongly as small white points. On the back of the neck, where the spots are smaller but of the same form, they have a somewhat different appearance. The colour is more red-purple and the atrophy less pronounced, and in some of them there seems even to exist a slight infiltration. The healthy skin is richly covered with hair and has no anomalies of pigmentation. The colour of the hair is dark blonde.

Microscopy of the affected skin did not show any changes in the epidermis, but an atrophy of the corium was present, accompanied by a slight cell infiltration along the vessels. By elastin colouring it was proved that the atrophy especially attacked the elastic tissues, whereas the connective tissue was only slightly altered.

Other Organs.—The examination of the lungs and heart showed a normal condition, except a displacement caused by the kypho-scoliosis. The abdomen was normal, without any soreness or perceptible growths. The examination of the sensibility of the affected parts of the skin did not show any difference, as regards the senses of touch, pain, and temperature, from the surrounding normal skin. There was no swelling of the thyroid gland. The pulse averaged a rate of about 80, and was regular and strong.

Special Investigations.—Haemoglobin 85 (Sahli); red corpuscles 4.1 million; white corpuscles 6,300, of which 75 per cent. were eosinophiles and 1 per cent. large mononuclears; number of blood plates 398,000 per c.mm.; coagulation time six minutes; volume of cells 39 per cent.; quantity of febrin in plasma 0.30 per cent. The Wassermann reaction was negative. Mantoux's, von Pirquet's, and Moro's tuberculin reactions were strongly positive. There was no focal reaction on the affected parts of the skin. Ewald's test meal showed normal figures of acid. The urine did not contain albumin or sugar.

According to the pedigree, the anamnesis, and the objective findings, there can scarcely be any doubt that the disease of the patient must be referred to the syndrome described by Eddowes. The examination by *x* rays has not corroborated the statement of the patient about previous fractures, but it is possible that the ten years have effaced the traces, and the fact of the bones being tiny and slightly calcareous is, from a diagnostic point of view, just as valuable as existing fractures. The hardness of hearing, which, as has been said above, is very slight, seems in our case to have another etiology than in the cases previously described.

The most interesting feature of the present case is the zonular cataract, which, as is generally recognized, is a hereditary affection, and which, as far as one knows, has not been described before in connexion with Eddowes's complex of symptoms. Further, there is the particular change in the skin which, in its development and appearance, corresponds to a description given for the first time by Thibierge,[22] who called it *athrophodermie érythémateuse en plaques à progression exentrique.* A similar case, differing, however, in some points, was reported later by Yadassohn,[23] who proposed the name *anetodermia erythematodes.* The name that has been used in most of the recent publications is, however, *atrofia maculosa cutis.*

In addition to the rather considerable foreign literature of this disease there exists a report by L. Nielsen[24] in the proceedings of the Danish Dermatological Society (March, 1899). It appears from the descriptions that the disease generally begins with round, slightly elevated, bluish-red spots, varying in size from a lentil to a shilling; these spots are, subsequently, slowly changed into atrophic areas; the beginning stage of infiltration has, however, in many cases not been seen. The histological investigations correspond entirely with the description given above.

Whether this rather rare cutaneous disease, in its nature quite unknown, is found accidentally in our patient together with Eddowes's complex of symptoms, or whether there really exists a connexion between them, will, of course, be impossible to state from this single case. If we consider that changes in the sclerotics and bones are due to a defective development of the mesodermal tissue, we are, however, apt to conclude that the cutaneous atrophies form a part of the entire disease. By going over the available literature regarding Eddowes's complex of symptoms, it has not been possible, however, to find any case in which cutaneous atrophies are mentioned; the only cutaneous affection which is mentioned is an eczema in Eddowes's[1] own patient. On the other hand, the attempt to find information about blue sclerotics and fractures in the literature of *atrophia maculosa cutis* has also been unsuccessful, only one author, Gottheil,[25] mentioning a patient with defectively developed bones and infantilism, but he says nothing about blue sclerae or fractures.

It will consequently require to be proved by future investigations whether a connexion exists between the cutaneous symptoms and the other symptoms of the disease. In addition to the possibility that the cutaneous atrophy may be a symptom parallel with the blue sclerotics, the brittle bones and the hard hearing, it is probable that the debility of the mesodermal tissue may predispose to the development of the cutaneous atrophy, although the latter may be produced by other causes.

Our thanks are due to Professor C. Rasch for permission to publish this case.

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(Those marked with * are not referred to from the original.)

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THE nineteenth Dutch Congress of Natural Science and Medicine will meet at Maestricht in Easter, 1923, under the presidency of Professor Spronck of Utrecht.

THE great parade ground at Berlin has been transformed into a field for light and sun baths for children with surgical tuberculosis.

THE DIFFICULTIES IN DIAGNOSIS AND TREATMENT OF HEPATIC ABSCESS.

BY

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THE present relatively high frequency of hepatic abscess as the result of oversea service during the recent war, the difficulty experienced in accurate diagnosis even when the lesion is borne in mind, the dramatic results of emetine treatment—these factors combine to make the disease of great importance at the moment. The following notes of cases which have occurred recently serve to illustrate the difficulties experienced. The fact that a patient has had a liver abscess in the past which has been surgically treated by no means excludes the development of a second abscess at some very considerably later date. The following two cases illustrate this:

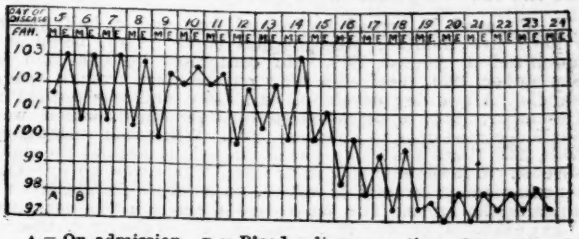
J. S., aged 43, served three years in Palestine, developed dysentery in 1918, and was operated upon in Gaza in that year. A large liver abscess was opened and drained. He reached home in February, 1919, and returned to work as a miner. He was admitted to hospital on August 25th, 1920, with intense hepatic pain. There was an operation scar in the region of the gall bladder. Liver dullness at the right base reached up to the angle of the scapula, the edge of that organ being felt four fingers below the costal margin. There was great tenderness over the seventh rib in the axillary line. *X*-ray examination showed fluid in the right pleura, a fixed diaphragm, and a very large liver. Under treatment this all disappeared, the diaphragm and liver returning to normal and the patient returned to work. He, however, came under observation again in January, 1921, with all the signs of an acute liver abscess, from which over two pints of pus were evacuated. He made a good recovery.

J. A. H., aged 30, had seven and a half years' army service, of which four years had been spent in India. He was operated upon in July, 1913, for hepatic abscess, of which the scars through the right rectus and the eighth rib in the axillary line still remain. He was discharged unfit for further service on account of rheumatoid arthritis in 1914. He was admitted to hospital on June 6th, 1920, on account of vomiting, pain in the right chest and right shoulder. Examination showed crippling of left hip, knee, and foot. The liver was only slightly enlarged upwards, but reached down to the iliac crest, and was very tender; there was slight pyrexia up to 100° F. at night. Under emetine the temperature quickly came to normal, and the liver had returned to its usual dimensions at the end of the usual sixteen-day course of treatment. He has remained well since.

Although cases presenting the syndrome of dysentery, pyrexia, leucocytosis, hepatic pain and enlargement, are generally diagnosed as hepatic abscess, it is important to remember that, although the right dome of the diaphragm may be pushed up and fixed, the pathological condition may still be an acute amoebic hepatitis. It is this condition in which dramatic cure may be effected, and, because this is the early stage of the disease, it is also the condition in which errors of diagnosis are easily committed. The differentiation of hepatitis from abscess formation is usually impossible unless clinical examination or *x* ray shows an actual bulging, and even then much surgery can be saved by vigorous emetine treatment—for instance, 1 grain of the hydrochloride night and morning subcutaneously or intramuscularly. So effective is this treatment that radiographic examinations at four-day intervals enable one to follow the diminution in the size of the liver, and the rapidity of recovery in these patients is one of the few curative joys of life vouchsafed the physician. The patient in a week or so is converted from a sallow-complexioned, wasted, sweating wreck to a comparatively normal individual with no pyrexia and no pain.

The accompanying temperature chart shows how easily these cases may be mistaken in the early stage for an enteric group infection. The temperature in this case came to an abrupt end on the exhibition of emetine, which was prescribed on account of the hepatic enlargement discovered on clinical examination.

A history of definite dysentery is not by any means always obtainable, but two forms of bowel looseness appear to be frequently associated with this grave complication: (1) Diarrhoea occurring at night, the bowel acting three or four times, and (2) two or three loose evacuations in the morning between breakfast and luncheon, intestinal peace reigning for the rest of the day. It is possible that this variety of bowel reaction to amoebic infection is not sufficiently severe either to send the patient for expert advice or to arouse at home the suspicion that the entamoeba is the responsible agent. Hence the condition goes untreated and uncured, giving rise to hepatic infection later. The following case illustrates this:



A = On admission. B = Blood culture negative. One grain of emetine was given on the fourteenth day, and thereafter one grain in the morning and one-third of a grain in the evening on each day from the fifteenth to the twenty-third day; one grain was given on the morning of the twenty-fourth day.

A. A., aged 43, served in Mesopotamia from 1916 to 1918, contracting dysentery in 1917, for which he was invalided to India. He has suffered from a slight diarrhoea ever since his return to England in May, 1919. The bowels have been open three or four times every morning, but he has been comfortable for the rest of the day. He was admitted to hospital on August 21st, 1920, with pain in the right hypochondrium and pyrexia up to 100° F. of one week's duration. The complexion was sallow and the patient obviously in great pain. The skin of the right lower ribs was blistered by the application of mustard leaves and hot-water bottles prior to admission. There was dullness at the right base for a handbreadth up, but the liver edge could not be felt. He was acutely sensitive to any pressure over the right lower ribs. *X*-ray examination revealed the right diaphragm pushed up and fixed by the hepatic enlargement. Under emetine the pain and tenderness rapidly disappeared, the liver enlargement more slowly, but on September 28th, 1920, the patient was discharged with only very slight limitation of right diaphragmatic movement. He looked very well and has remained so till now.

On the other hand, grave difficulty may arise from the scarring which must follow the evacuation of a liver abscess. The following case is still a source of anxiety, and has been so for some weeks past.

W. H., aged 50, served in India from 1896 to 1912, where he contracted both dysentery and malaria. He rejoined the army in 1915, and was operated upon in that year at Grantham for a liver abscess. In 1916 another operation was undertaken at Herne Bay for the repair of a hernia which had developed at the site of the wound. He came under observation in February, 1921, for malaria and a recent recurrence of dysentery. There was a central epigastric scar, through or in the thin wall of which hepatic tissue was visible. The upper limit of the liver was normal, but its edge reached two fingerbreadths below the costal margin. It was not tender. No splenic enlargement and no malaria parasites were found. There was an extensive fistula in ano with three separate openings, from which much pus and some blood was discharging. No entamoebae were found in the stools, but the *x*-ray examination revealed a large liver, with some impaired movement of the right diaphragmatic dome and a very obvious bulging upwards just to the right of the pericardium. There was no pyrexia, no leucocytosis, no pain, and no tenderness, but the patient had a very marked clubbing of the fingers for which no cause could be found.

The fistula was excised and rapid healing took place; histological examination of the tissue showed no entamoebae. The patient remains quite well, the *x*-ray appearances being attributed to the cicatrix of his previous abscess, since no change in its appearance has taken place in three months. The disturbing factor of his clubbed fingers remains unexplained, but he is emphysematous and may possibly belong to the group now designated Ayerza's disease.

The case below is worthy of record owing to the rarity with which amoebic abscesses are found in the lesser peritoneal sac.

R. C. P., aged 23, contracted dysentery at Cantara in April, 1919. He was demobilized in September, 1919, and had been ill ever since with pain in the chest and abdomen, accompanied by constipation. He was seen on November 11th, 1919, and found to have hectic temperature, sweating, wasting, extreme prostration, and a curious earthy pallor. The lower thorax and abdomen were held rigid, and a large tumour mass was both seen and felt in the left hypochondrium, which was acutely tender. Mr. Graham Simpson of Sheffield Royal Hospital very kindly operated upon this urgent case: incision through the left rectus revealed the left lobe of the liver, and a large fluctuating swelling the size of a cocoanut was felt in the lesser sac behind the stomach; this was drained through the lesser omentum. On the third day after operation consolidation of the right pulmonary base was found. On the fourth day emetine was started; the temperature became normal in three days and remained so, recovery being uninterrupted.

It is scarcely necessary to observe that every liver abscess, though solitary, is not due to the entamoeba, as the two following anomalous cases show:

P. P., aged 29, served in Ireland four and a half years, France five months, Mesopotamia three years, being demobilized in August, 1919. He contracted malaria, and in September, 1918, received a blow on the chest from a spade handle. A swelling developed painlessly, and was opened in December, 1918; a discharging sinus remained, which was again operated upon in February, 1919. When seen on January 30th, 1920, there was still a discharging sinus around the right seventh rib in the mid-clavicular line. There was no pyrexia, no enlargement of liver or spleen, no enlarged glands, and no signs in the lungs. The Wassermann reaction was negative. *X*-ray examination showed no enlargement of the liver. Operation revealed a hydatid cyst of the upper surface of the diaphragm, removed with much difficulty, the sinus taking several weeks to heal.

H. W., aged 24, a machinist (female), had suffered from pain in the right side for the past three months, but had only been off work for the past three weeks. When first seen on March 15th, 1921, she looked flushed and very ill, with great dyspnoea and a rapid pulse. The heart's apex beat was in the third space in the nipple line on the left side. Dullness at the right base extended up to the third rib in front, and on the left side to the sixth rib in the lateral line. The right chest was tapped, and thirty-four ounces of clear but spontaneously coagulable fluid was drawn off. The hectic temperature continued, and the dyspnoea was but little relieved. The apex beat returned to the fifth space in the nipple line, but the right-sided dullness persisted, although the left had disappeared. A needle was introduced into the right chest on two subsequent occasions, but only blood was obtained. The liver edge reached below the umbilicus throughout.

The chest was explored, as it seemed likely that the trouble lay beneath the diaphragm, and a huge suppurating hydatid cyst of liver was found which during the operation burst into the lung, producing some haemoptysis. The blood showed a marked leucocytosis but no eosinophilia. Later it was found that complement fixation, using the clear fluid obtained from daughter cysts, gave with the patient's serum a complete fixation in 1 in 20 dilution and delayed lysis in 1 in 40 dilution. With two controls no fixation was obtained. This patient had never lived outside northern England. Her death, which occurred on the fifth day after operation, was hardly surprising in view of the great extent of hepatic damage.

To my surgical colleagues, Mr. W. R. Douglas, Mr. John Morley, and Mr. Geoffrey Jefferson, for their ever ready help and advice in these difficult and anxious cases, I would offer my grateful thanks.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SUDDEN DEATH FROM ASPHYXIA FOLLOWING REGURGITATION OF SEMI-DIGESTED FOOD.

As the following case possesses some medico-legal interest it has been thought advisable to bring it to general notice.

A man, aged 52, was brought in dead to King Edward VII Hospital, Cardiff, on the evening of November 7th, having shortly before died suddenly in a hotel bar. The *post-mortem* examination was made on the morning of November 9th. The body was that of a well-preserved, well-developed man, and, beyond a slight abrasion on the right forehead, there was nothing abnormal in the external appearances of the body. *Post-mortem* staining and rigor mortis were present, but there were no traces of lividity.

On opening the body it was noticed that the veins of the neck were greatly distended with very dark fluid blood; this escaped on severance of the veins, leaving the large veins and right side of the heart without a trace of blood. The escaped blood clotted quickly outside the body. The fluidity of the blood within the body is attributed to the suddenness of the death, the subsequent cooling of the body, and the absence of factors facilitating deposition of blood platelets. Apart from dilatation of the chambers, and a slight increase of epicardial fat, the heart was in very good condition.

The lungs were engorged with dark blood, which brightened on exposure to the air. There was no oedema and but very slight emphysema. Impacted in both bronchi, in the right to a greater extent than in the left, was some creamy pultaceous material, which extended into the bronchioles of both lungs. There was no inflammatory reaction. Traces of the same material were found in the trachea, larynx, and oesophagus, none of which showed any evidence of inflammation. On examination, the material appeared to be composed of semi-digested food; the total quantity present did not exceed two tablespoonfuls.

The stomach was almost empty. The mucous membrane of the oesophageal antrum showed capillary engorgement and rugae were present. The pyloric antrum, on the other hand, showed digested rugae and the presence of a few cubic centimetres of semifluid digested material tinged with altered haemoglobin and emitting an odour of stale alcohol. The other organs of the body, including the brain, were free from any pathological condition, apart from some venous engorgement.

There was therefore presumptive evidence of the ingestion of some irritant on an almost empty stomach containing the remains of a semi-digested light meal, followed by vomiting and regurgitation into the larynx and trachea, and so into the bronchi and bronchioles, producing speedy suffocation. The irritant action of the ingested material was evidenced by the condition of the mucous membrane of the oesophageal antrum and its preservative nature by the persistence of the rugae at this site. The odour of the stomach contents suggested the alcoholic nature of the irritant. These findings were borne out by the details related at the inquest. His last meal, taken at 5.30 p.m., consisted of tea and bread-and-butter. He arrived at the public-house at 8.20 p.m. and sat drinking until 9.30 p.m., when he was noticed to gasp for breath, his head fell back, and his pipe dropped out of his mouth; death appeared to be practically instantaneous. It is conjectured that on account of the presence of some women friends he attempted to suppress the vomiting which took place.

Cardiff. E. EMRYS-ROBERTS, M.D.

A CASE OF PELIOSIS RHEUMATICA.

IN view of the recent discussion on the phenomena of acute rheumatism, the following case may be of interest.

A man, aged 26, was taken ill on November 14th with joint pains. He remained at work until November 16th, when he contracted a sore throat and took to his bed. He was admitted to the Ham Green Hospital, Bristol, on November 17th as a suspected case of diphtheria. On admission his throat was very congested, with a small ulcerated patch on the left tonsil; the tongue was furred. He complained of pain and stiffness of the joints, and fluid was detected in the right knee-joint. The heart sounds were normal, the temperature 100°, and the pulse 98. He was given a small dose of diphtheria antitoxin and large doses of sodium bicarbonate and sodium salicylate. He got no relief even after the salicylates had been pushed further. On November 20th raised areas of large haemorrhagic patches appeared on the left hip, both knees, and on the forehead. There were purpuric patches also on the palate. There was no eruption on the back. Further patches of ulceration appeared at the base of the uvula and on the lower lip. The joint pains were still present; aspirin was substituted for sodium salicylate, but with no better result. On November 21st the temperature rose to 103°, and remained there for forty-eight hours; it dropped to normal on November 24th, and remained down. The joint pains and patches of ulceration cleared up rapidly, and he was discharged on November 29th. During the height of the fever there was a thick cloud of albumin in the urine. The throat swabs were negative to diphtheria and Vincent infection.

The combination of joint pains, sore throat, and purpuric eruption was first described by Schönlein under the name of peliosis rheumatica, but it appears to differ from acute rheumatism in the following respects:

The joint pains are not nearly so severe as those of acute rheumatism, and the patient can move about with a fair degree of comfort.

The profuse sweating so characteristic of acute rheumatism is absent. Endocarditis does not occur.

Salicylates appear to have no effect whatsoever on the joint pains or the temperature.

H. V. JACKSON, M.R.C.S.

Bristol City Isolation Hospital.

AT a recent meeting of the Féderation Internationale at the Hague it was decided to hold an international dental congress at Madrid, to which Germans and Austrians would be invited.

A LARGE number of professorial chairs are vacant in Prussian universities, including those of radiology, history of medicine, embryology, and laryngology at Berlin; medicine, medical jurisprudence, and pharmacology at Königsberg; pathological anatomy, medical jurisprudence, and dentistry at Bonn, and pharmacology at Kiel.

THE Ministry of Food in Germany has formed a committee to promote scientific investigations on food. The committee consists of Professors Abderhalden and Rubner for the physiology of nutrition; Baur and G. Haberlandt for vegetable physiology; A. Haiduschka, A. Juckernack, and T. Paul for the chemistry of food; R. O. Neumann for bacteriology and alimentary hygiene; F. Müller for chemical questions, and R. Kuczynski for statistics.

Reports of Societies.

THE INCIDENCE OF ECLAMPSIA.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine held on December 1st, with Professor HENRY BRIGGS, President, in the chair, Mr. R. H. PARAMORE read a paper on eclampsia and its incidence. He believed eclampsia was simply a uraemia, distinguishable from other acute uraemias only in the method of its production. The necrosis of the maternal kidney and liver was an ischaemic necrosis—a necrosis due to a shutting off of the blood supply. The cessation of the blood flow was determined by an occlusion, not of the supplying arterioles, but of the capillaries into which these arterioles led; and the occlusion was produced, not by a thrombosis, but by a pressure. The thrombosis was secondary to the necrosis, and the pressure was due to the raised intra-abdominal tension, which in certain cases of pregnancy was exaggerated, and to which the rises induced by activity and especially by labour were superadded. The incidence of eclampsia supported this conception. Thus, eclampsia was most common in primigravidae and also more common in strong muscular women than in fragile or diseased (for instance, phthisical) women. The unmarried pregnant woman was more prone to eclampsia than the married, because she constricted her abdomen by corsets, endeavouring to prevent the abdominal distension which the woman in wedlock had no motive to hide. Eclampsia, however, also occurred in other kinds of cases—in twins, hydramnios, concealed accidental haemorrhage, and in hydatidiform mole. The first three types at least had one conspicuous feature in common—that the uterus was greatly larger than it should be for the period of the pregnancy. This necessarily must affect the intra-abdominal pressure. And labour, by which great rises of this pressure occur, also played a part in the causation of eclampsia. *Post-partum* eclampsia was to be attributed to the effects of labour. Labour increased the albuminuria of pregnancy and often first caused albumin to appear. The question of the effect of straining on the blood flow through the viscera had not been considered. Mr. Paramore stated that the blood chose the easiest path, and that not all the organs, or indeed all parts of the same organ, were supplied in quite the same way. The great mass of blood reaching the liver had first to pass through the gastric and intestinal capillary network, whilst that reaching the convoluted tubules of the kidneys first traversed the glomeruli. If in consequence of an increase of intra-abdominal pressure an obstruction in these secondary capillary areas occurred, it could surprise no one that the tissues concerned should suffer from an inanition or that an ischaemic necrosis should result. The question was whether a study of the intra-abdominal pressure and of the incidence of eclampsia warranted the acceptance that such actually happened. He believed that the evidence more than justified such a conclusion.

In the discussion that followed Mr. MALCOLM said that Mr. Paramore had brought forward a definite, easily understood explanation of an admittedly difficult question, and argued his point with ingenuity. He overlooked the fact that the same argument was applicable to the power of the body to avoid the effects of a too great pressure upon the liver and kidneys. Again, it was stated in the paper that the blood in its course chose the easiest path. This ignored altogether the control of the vessels by the sympathetic nervous system, which should bring about a contraction of all the vessels of the body rather than allow a pressure necrosis of the important organs affected in eclampsia.

Dr. GILES asked whether Mr. Paramore had considered the question of the production of lesions of the liver and kidney as the result of increase of intra-abdominal pressure from tumours, apart from pregnancy.

The paper was also discussed by several other speakers, who had difficulty in accepting the pressure theory.

Mr. JOHN ELLISON showed specimens from an unusual case of ectopic gestation. The patient was a young woman who had been married four weeks and whose last period was a fortnight before marriage. For a week before admission to St. George's Hospital there had been some tenderness of the breasts, and five days before she had sudden pain in the right iliac fossa which made her feel faint. The abdomen was opened and the right tube was removed. The section of the tube at the point where the cone touched it showed normal lumen and wall with blood surrounding it. The tube appeared to be quite normal, and for that reason the author suggested that the primary implantation had occurred on the pelvic peritoneum and embedded itself in the retroperitoneal space. Mr. John Ellison also showed a specimen of squamous-celled carcinoma of the cervix uteri associated with a nodule of spheroidal-celled carcinoma of the body of the uterus.

Mr. SIDNEY FORSDIKE showed microscope slides from a case of carcinoma of the cervix in a virgin aged 24 years and 10 months. When 23 years and 3 months old she began to have irregular bleedings from the vagina; she saw a doctor, who told her to go to hospital if they did not cease. The bleeding became worse and there were occasional floodings, but she did not go to hospital until November, 1921, one year and seven months after the onset of symptoms. Then on examination the hymen was found intact, but by rectum the cervix was felt hard and enlarged. Under an anaesthetic a few days later a large growth involving the vaginal walls and bases of broad ligaments was found; a piece was removed for pathological examination. The growth was quite inoperable and radium treatment was given. The microscope showed the growth to be columnar-celled carcinoma.

OXYCEPHALY.

AT a meeting of the Medico-Chirurgical Society of Edinburgh on December 7th, 1921, with Sir ROBERT W. PHILIP in the chair, Mr. D. M. GREIG gave a demonstration of certain features of the oxycephalic skull and of the oxycephalic syndrome which included webbing of the fingers and toes, frequently with interdigital synostoses, and inability to extend fully certain joints, especially the elbow-joints. The condition was congenital, and possibly also hereditary, from its occurrence in individuals in minor degrees. The sex incidence was about equal. A short clinical history was given of four cases. In two the condition was slight: a boy of 8 with oxycephaly, but without syndactylism; and a girl of 8 with the typical skull, with syndactylism and normal mental development. In two adult cases the condition was much more pronounced. One was a man of 56, with a healthy pedigree, and married, with three children, of whom one had died in infancy from meningo-myelocele, two survived and were apparently healthy. The man's skull was typically oxycephalic; there was no syndactyly, but there was limited extension at the elbows. His mental development was under the average, but this perhaps was to be explained by the defective hearing and eyesight which existed; the man was able to work and to maintain his family. The features of this case were demonstrated by photographs and radiograms. The second adult case was a man of 47, of well developed body, but illiterate. In addition to oxycephaly, he showed complete webbing of the fingers and toes, and had synostoses of certain parts of the phalangeal bones. The skull was shown and its features demonstrated. The main points were the smallness of the bones of the base of the skull and of the superior maxilla and palate; the very narrow bony foramina in the basal region (the jugular foramen admitted only a fine quill); the bulging out of the temporal fossae; the typical peaked vertex of the skull; and the thinness of the bones of the vertex which produced in radiograms the characteristic "digital impressions."

The factors in the growth of the normal skull were discussed and the effect of normal synostosis in moulding the shape of the ununited portion of the skull. Mr. Greig's explanation was that in oxycephaly the bones fused whenever they touched, this synostosis beginning unusually early. A clue to the commencement of the process was to be found in the associated synostosis of the phalangeal bones. These bones were being formed about the fourth week of foetal life. With regard to this point of date, a skull obtained from Paris, without any history attached, was demonstrated. This skull showed in the vertex the features of oxycephaly, but the bony elements of the base, and also the maxillary and palatal bones, were of normal size. It was argued that in this case the forces altering the shape of the vertex could only have come into

play at a much later date in the life-history, certainly after birth, and probably not till adolescence. This interesting specimen he described as an example of pseudo-oxycephaly.

Clinical Value of Renal Function Tests.

Dr. J. D. COMRIE gave an account of the common tests of renal function, and of their value in the diagnosis and prognosis of kidney cases. He described the technique of three tests: blood urea estimation, phenolsulphonephthalein excretion, and the urea concentration test. In his opinion the most valuable single test was the phenolsulphonephthalein, but it was more useful to combine the three tests and to obtain a short series of the group. With regard to diagnosis, these tests enabled an earlier diagnosis of commencing interstitial nephritis than did the ordinary methods of clinical observation; also, in those cases of advanced heart disease where there were signs of kidney involvement, these tests more accurately discriminated between the effects of a renal venous congestion and those of a more serious involvement of structure and function. There were also groups of cases where these tests had made prognosis more accurate; in acute parenchymatous nephritis, whether the ultimate result was recovery or a serious and permanent damage to the kidneys, this result, good or bad, could be foreshadowed more accurately by a series of these tests. Dr. Comrie quoted a striking case of interstitial nephritis where the ordinary clinical signs gave no serious warning, while the special renal function tests were definitely bad and the patient died in a few months.

Dr. R. FLEMING said these newer methods had assisted treatment by securing more accurate diagnosis and prognosis. There seemed a possible fallacy in the blood urea test, in that the liver and other organs might hold up a proportion of the retained nitrogen. Dr. W. DAVIES criticized the use of soya-bean meal in the estimation of blood urea; he had found it too variable in its ferment action. He alluded to cases of acidosis complicating nephritis and giving a high blood urea reading independent of the renal disease.

Dr. W. T. RITCHIE had found the phenolsulphonephthalein test especially useful in combined cardio-renal conditions. Dr. CHALMERS WATSON attached most value to the blood urea test, but on the whole was sceptical as to any great assistance from these tests in their present stage of development.

ORAL SEPSIS AND SYSTEMIC DISEASE.

A MEETING of the Leeds and West Riding Medico-Chirurgical Society was held at the General Infirmary, Leeds, on November 25th, in conjunction with the Leeds Branch of the British Dental Association. Dr. BERTRAM WATSON (Harrogate) opened a discussion on oral sepsis and systemic disease. After referring to Dr. William Hunter's pioneer work, the speaker said he purposed dealing mainly with chronic apical infection, probably the most important of the focal infections. He briefly alluded to Rosenow's work on selective localization of bacteria, and described the changes found at the apices of infected teeth, emphasizing that these conditions were often symptomless, and recognizable only by dental radiography. He enumerated various systemic disorders which might be attributable to oral sepsis, laying stress on malignant endocarditis, nephritis, and the rheumatic group of diseases. He concluded with a plea for closer co-operation between physician, dental surgeon, and radiographer, and for a fuller recognition of the potentialities of dental work for good or evil.

Mr. H. B. SCARGILL explained the methods used in the *x*-ray examination of the teeth, illustrating his remarks by numerous lantern slides.

The pathology and bacteriology of oral sepsis were dealt with by Dr. SINCLAIR MILLER (Harrogate), who described the various types of gingivitis and pyorrhoea alveolaris, and expressed the opinion that other factors as well as bacteria were essential for the production of these conditions. In speaking of apical and peri-apical infections of the chronic type, Dr. Miller quoted his bacteriological findings in a large series of teeth condemned by *x* ray and removed from patients suffering from systemic disease, with a view to vaccine therapy. Streptococci, falling chiefly into the *viridans* group, were obtained from all specimens of the series; other organisms in addition were cultured in a small percentage of the cases. The speaker demonstrated by lantern slides bacteria lying in granulomatous tissue removed from the apices of infected teeth.

Mr. G. A. PHILLIPS said that though Dr. Hunter's work had led to a proper appreciation of the damage caused by septic conditions in the mouth, there appeared to be grounds for complaint in some quarters against the increasing sacrifice of teeth in the treatment of certain systemic disorders. After discussing the mode of origin of peri-apical infection and chronic suppurative peri-odontitis, Mr. Phillips stated that many dentists had doubts as to the results of devitalization of pulps and of attempts at disinfection or preservation of asepsis in root canals by the use of caustic and antiseptic drugs; the difficulty might, however, be met by the use in an aseptic root of a neutral filling material, and, when antiseptics were required, by drainage and redressing at short intervals, removing all traces of drugs before the permanent fillings were introduced. He expressed doubts as to whether complete confidence should be placed in radiograms. He felt that the dentist should require reasonable proof of the need for sacrificing any large number of teeth, and he entered a plea for a wider exercise of caution and thoroughness in diagnosis.

Mr. G. L. WILKINSON said that while there was perhaps no positive proof that focal abscesses or granulomata at the apices of the teeth were often the cause of infected hearts and joints, much circumstantial evidence had been presented during the last few years. He asked that these cases should be considered without prejudice and with a close co-operation between physician and dentist. He entered a strong plea for a careful conservative treatment, pointing out that areas of rarefaction, as shown by radiology, disappeared after infection was removed. He advocated as suitable for front teeth the method of amputation of the necrotic apex through the outer wall of the alveolar process after filling of the canal with some hard and suitable material. A discussion followed, in which Dr. LIVINGSTONE, dental pathologist at the University of Liverpool, took part.

STERILITY.

A MEETING of the London Association of the Medical Women's Federation was held on December 13th at the Elizabeth Garrett Anderson Hospital, with Dr. LOUISA MARTINDALE, the President, in the chair.

Dr. CHRISTINE MURRELL briefly reviewed the possible causes of sterility, emphasizing at the outset the fact that the condition of the husband as well as of the wife had always to be taken into consideration. Where active spermatozoa were present in the seminal fluid sterility might be due to incomplete or too rapid coitus, to mechanical obstruction to the upward passage of spermatozoa—as, for instance, in cases of uterine displacement, or in cervical obstructions as from profuse discharge, or stenosis of the internal os. The uterine lining might be unsuitable for imbedding, or there might be disease of the tubes or of the ovaries. Apart from the mechanical causes, which could often be treated surgically, there was still much work to be done in the study of the different endocrine glands as they affected pregnancy. Dr. Murrell discussed at some length the "higher up or hormone" theory of sterility and the particular effects of administration of such internal gland preparations as thyroid, post-pituitary, thymus, and the various ovarian extracts, on menstruation, ovulation, and pregnancy. She indicated the theoretical grounds on which the different endocrine preparations might be expected to be of value, and the particular conditions in which she had found them useful.

Miss ELIZABETH BOLTON said that she had put together the cases she had seen in private who had come complaining of sterility after having been married more than two years. She had not attempted to get statistics from hospital patients, partly because she had not time to get answers from them and partly because one did not get as fair a chance of talking with the patients themselves and of advising that the husband be examined before any operative treatment for the wife was undertaken. In all cases she talked to the patients first and tried to find out what kind of life they led, whether they tended to overdo

themselves physically, whether there was marked mental strain, and also whether dyspareunia was present. If so it was treated. In some cases dilatation with a stretching speculum like Cusco's was enough. In others she obtained for the patient a graduated vaginal dilator and advised her to use it for half an hour daily for two months. In the extreme cases she examined the patient under an anaesthetic and dilated the vagina at one sitting. If possible, she preferred the more gradual methods. The frequency and time of connexion was then inquired into, especially in relation to the desires of the woman. In many cases the patient stated that there was not retention of semen, and in these cases she generally suggested the use of a bolster to raise up the hips, and the alteration of position from the dorsal to the semiprone after intercourse.

She had notes of 150 cases, all of whom had been examined, but 28 of whom were not treated and were not seen again. This left a total of 122 treated cases, of whom 63 became pregnant. On considering these cases she found that they fell into four different classes, according to the gynaecological findings, and she had found a gynaecological abnormality in every case. Of these 150 cases, 86 had marked anteflexion with, in the great majority, an elongated cervix pointing forwards; 20 had retroversion, 28 fibroids, and there were 16 tube cases.

Of the 86 anteflexions 16 were untreated, and of the remaining 70, 40 became pregnant; 52 had a dilatation and curetting, 3 having had the passage of a sound tried first; of these 27 became pregnant. Nineteen had a sound passed only, and of these 10 became pregnant. Two had vaginal septa, and these became pregnant later. One was treated by injection of semen twice after two dilatations, but with no result. One had an exploratory operation, when the ovaries were found to be adherent and were freed, while a dilatation was also done; the patient became pregnant. In all these cases the passage of the sound and dilatation were done if possible at such a time as to allow intercourse before the next period. The time of pregnancy in relation to the operation varied greatly; in the majority of cases it occurred within a few months, in a few cases at once, and in a few others after from two to three years, but she had not heard of any after a longer period than three years. A good many of the dilatation cases were operated upon on account of dysmenorrhoea as well as sterility, and many of these were much better from the point of view of the dysmenorrhoea, although they did not become pregnant.

Of the 20 retroversions 2 were untreated, and 13 of the remaining 18 became pregnant; 11 had the retroversion replaced and a Hodge pessary inserted; 4 of these were treated by a dilatation, and 2 had a sound passed. Of the 11 cases treated with a Hodge pessary 7 became pregnant; 2 retroversions with adherent tubes had an exploratory laparotomy, and both later became pregnant. Five Gillian operations were done for sterility, and 4 of these cases became pregnant.

Of the 16 tube cases 3 were untreated; 13 had operative treatment, and of these 4 became pregnant; all four had the right tube only involved, complicated by the appendix.

Of the 28 fibroid cases 7 were untreated, and of the remaining 21, 7 became pregnant; 2 of these had a large polyp removed by the vaginal route, while the other 5 had several fibroids removed by abdominal myomectomy. Miss Bolton usually advised patients after myomectomy to avoid pregnancy for six months. She had had one patient from whom she removed large fibroids by myomectomy, who was found at the time to be about two months pregnant. This patient had had no previous pregnancy, had been married fourteen years, and was 42. She went to term quite satisfactorily.

In considering this comparatively small number of cases Miss Bolton thought it was worth noting that all had a gynaecological condition which might account for the sterility, and that over 51 per cent. of the total number of treated cases became pregnant.

THE fiftieth annual meeting of the Société Médicale de la Suisse Romande was held in October at Lausanne, Dr. Monnier, of Neuchâtel, presiding.

THE Medical Society of the County of Erie (New York) celebrated the centenary of its incorporation on October 17th.

Reviews.

THE HEALTH OF QUEEN ELIZABETH.

COUNT FOSCO observed that the English intellect was sound as far as it went, but tended to be cautious in the wrong place. This is certainly true of the attitude laymen adopt towards the opinions of medical men. The man who permits himself to criticize the technical details of a method of treatment of which he cannot possibly be a judge will often be found to attach the greatest importance to a medical *obiter dictum*. This remark is prompted by a review of Mr. FREDERICK CHAMBERLIN'S book, *The Private Character of Queen Elizabeth*,[1] which appeared in the Literary Supplement of the *Times*. According to the *Times* reviewer, the chief importance of Mr. Chamberlin's book is on the medical side. "It is satisfactory," we are told, "to have a ruling on the question from a competent medical authority." Historians and novelists have devoted many more or less interesting pages to the great queen's love affairs; but "with the medical verdict, *cadit questio*. What was physically impossible cannot have happened." Such is the impression created on the mind of an educated layman by utterances of some eminent medical men printed in Mr. Chamberlin's book. It will be interesting to consider what was said by the "doctors" and upon what grounds.

Mr. Chamberlin first collected every extant contemporary remark upon Elizabeth's health, arranged the statements in chronological order, appended ten questions (of the type usually objected to by counsel as "leading") and submitted the dossier to five medical men.

The general character of the answers and the extent to which the word unanimous (employed by the *Times* reviewer) is applicable may be judged from a single instance. Mr. Chamberlin's fifth question was: "Did she [that is, Queen Elizabeth] or did she not probably have a strong constitution?" Sir William Osler answered, "A strongly neurotic one." To this remark we find Mr. Chamberlin has attached a remarkable footnote asserting that erotic, neurotic and neuropathic are popularly supposed to be synonyms—"all except purists in our tongue and medical men understand the three terms to be interchangeable." Sir Clifford Allbutt answers the question in the negative; Mr. Alban Doran leaves it alone; Dr. J. A. Howard says, "this question has no medical meaning and should be deleted." Sir Arthur Keith says that "clearly we have not the data to assess the nature of Queen Elizabeth's constitution, except by noting the reaction of her brain and body to the changing conditions in which they were placed. But if we may use the expressions as they are habitually employed in ordinary speech we should certainly say she was of a nervous constitution."

When we turn to the "evidence" it is found to consist of the gossip of servants, extracts from the letters of ambassadors, politicians, and in general of matter amply justifying Sir Clifford Allbutt's surmise that "the tittle-tattle of Courts, the subtilty of embassies, much exaggerated the symptoms of many of the indispositions," and Sir William Osler's blunt remark, "probably far too much was made of her illnesses." But how, in the face of these plain statements, could an intelligent critic have reached the conclusion we have quoted?

Sir Arthur Keith must, we fear, bear the burden. He began his contribution by stating very plainly that the data were inadequate to support a scientific conclusion. As he says, one "has to attempt a diagnosis on historical data, not set down by expert observers, but by men and women who, in our sense, were not acquainted with the elements of medicine." Sir Arthur Keith has, however, attempted to draw certain conclusions from the meagre details supplied to him.

According to the "evidence," Elizabeth, from the age of 14, was frequently ill; sometimes definite physical stigmata, such as dropsy, are mentioned, more frequently indeterminate symptoms suggesting "hysteria" are reported. There are also remarks which point fairly distinctly to amenorrhoea or dysmenorrhoea, and, especially about the normal time of menopause, headache, violent fits of temper, and so forth, are recorded. Sir Arthur Keith

[1] *The Private Character of Queen Elizabeth.* By Frederick Chamberlin. London; John Lane. 1921. (Pp. 334. 18s. net.)

suggests that all these may be referred to an abnormal sexual system, and that "in a medical sense her sexual system was blasted, she had neither the instinct of sweetheart nor mother—for these instincts are impossible in such a frame as hers." Sir Arthur goes further: he thinks that these disabilities were advantageous to the queen. "A healthy sexual life," he says, "a womb and ovaries in perfect health, a body that glows in full perfection of womanly beauty, are handicaps to a woman who has to steer a course amidst the shoals and narrows of the Sea of State; with such a full endowment she cannot but be the slave of the qualities with which nature has so richly dowered her." This opinion will affect different medical readers differently. Some will hastily say that it sounds rather like nonsense; others will be reminded of the immortal Sherlock Holmes's deduction from the manner in which Watson's boots were laced that his faithful biographer had had a Turkish bath; others — probably a majority — will call it eloquent and thought-provoking. None will accept it as a scientific deduction from adequate data. That it should produce so different an impression upon the lay reader is a significant fact and one we should all take to heart.

Whether Queen Elizabeth was or was not capable of a normal sexual life is—*pace* Mr. Chamberlin—a subject of the same order of importance as the authorship of the *Junius* letters or the tunes Arion played to the dolphins. But it is not a trivial matter that the authority of medical science should be extended to cover *obiter dicta* such as that in which the *Times* reviewer indulges. The usage Sir Arthur Keith has experienced shows what unexpected results may flow from the discussion of psycho-pathological topics in popular books.

PROGNOSIS IN CONGENITAL HEART DISEASE.

Le Traité des maladies congénitales du coeur[2] is the result of ten years' work by Dr. C. LAUBRY, physician to the Hôpital La Rochefoucauld, Paris, and Professor C. PEZZI, of the University of Pavia, the editor of the Italian archives of heart disease, who worked for some years in Professor H. Vaquez's wards in Paris. The authors show that instead of being merely an attractive study of pathological curiosities and at most a subject of clinical interest in children's and lying-in hospitals, congenital heart disease has a hitherto unexpected importance in the explanation of unusual cardiac conditions in adult life. They also draw attention to the long duration and latency of many cases, the true facts with regard to which have been kept in the shade and hardly recognized sufficiently by reason of the deaths that occur soon after birth and in early life. Further, congenital lesions of the heart due to malformations do not weaken the cardiac muscle in the same way that acquired disease, due in the vast majority of cases to some infective factor, necessarily does. A hopeful view is taken of the outlook of pregnant women with congenital morbus cordis, the authors finding that this event is more often accomplished with success than accompanied by calamity. Their experience does not tally with the general impression that pulmonary tuberculosis is a common termination in congenital heart disease, and especially in pulmonary stenosis, for in none of their cases was the tubercle bacillus found in the sputum. A feature of the research undertaken in the preparation of this monograph is the analysis, by means of graphic methods, the electrocardiograph and the fluorescent screen, of congenital lesions in adults; in them these methods are much more successful than in infants.

After introductory chapters on the development of the heart, on the general morbid anatomy of congenital cardiac lesions and on their pathogeny, the various forms of congenital morbus cordis are considered seriatim and in admirable detail. The old hypothesis of a true malformation as the explanation of the morbid changes is reinstated in place of the conception of foetal endocarditis which has appealed more to medical authority, at any rate until the appearance of Sir Arthur Keith's work on the bulbus cordis; but it is definitely stated that foetal endocarditis is mainly responsible for two conditions—namely, tricuspid stenosis and stenosis of the pulmonary orifice (as apart from the infundibulum). The influence of congenital syphilis is fully discussed and is shown to be an important but not exclusive factor in causing cardiac malformations, for in more than half the authors' cases the Wassermann reaction in the patients and their parents was negative. The positive evidence in support of the belief in the influence of parental tuberculosis in inducing congenital heart disease in the offspring is carefully examined and found to be too scanty to lend any support to such an explanation. The reported examples of congenital mitral stenosis are submitted to careful criticism, and though the existence of a small group of cases of true malformation or of foetal endocarditis is admitted, the great majority of the reputed cases are regarded as the result of attenuated endocarditis arising after birth.

The subject of a patent ductus arteriosus is discussed at length, and as a preliminary consideration the causes of normal closure are minutely described; while agreeing with the late Dr. G. A. Gibson as to the diagnostic value of a murmur continuous through systole and diastole, the authors do not regard it as pathognomonic, nor do they believe that it is constantly present. A full and attractive account is given of coarctation of the aorta; it is illustrated by diagrams of the two types found in the newly born and in the adult respectively, and by a scheme of the collateral circulation that develops as the result of this constriction of the aorta near the junction with the ductus arteriosus.

The careful clinical descriptions and the analysis of the copious literature, including that of this country, render this important monograph a valuable source of reference.

EMERGENCY SURGERY.

THERE would appear to be a certain attraction in the compilation of works on emergency surgery. They allow to the author considerable licence in the selection of his material and enable him to dogmatize on principles of practice without any very laborious reference to authority. The value of such books to those to whom they are intended to appeal depends essentially on the soundness of the practical advice given. The book by Dr. JOHN J. MOORHEAD entitled *Traumatic Surgery*,[3] the second edition of which is before us, is a work of this character, and a large part of its subject matter quite obviously belongs to the category indicated, though certain chapters, such as those on diseases of bone, deformities of the hands and feet, and traumatic neuroses, are not commonly so classified.

In his consideration of the treatment of wounds in general, the author, although he pays homage in the letter to the most successful procedures brought to notice during the last seven years, appears to be imbued with the spirit of what may be termed pre-war methods. There is a good chapter on infection of the hands and fingers, in which the anatomical situation of pus collections and the best lines of incision for their evacuation are carefully studied. The subject of joint injuries is illustrated by a series of pictures from Murphy's *Clinics* showing in detail the vascular supply to the larger articulations. In treating acute suppurative arthritis the author appears still to favour the use of rubber tubes for drainage, and in certain cases of knee-joint infection advocates transverse incision of the joint followed by its full flexion. In this section twenty-four pictures, illustrating the various stages of the operation of arthroplasty according to Murphy's methods, are included. Dislocations are dealt with on classical lines. As might be expected, considerable space is devoted to the subject of fractures, though the chapters are not exhaustive. For example, the author does not discuss as a cause of non-union in fractures the presence of synovial fluid between the broken surfaces, and further, the minor but important fractures of the hand and foot receive very short notice. His view, that *x* rays should not be necessary in the diagnosis of fractures, will hardly be assented to by most surgeons of to-day; however estimable it may be to encourage the clinical diagnosis of these injuries, it is clearly undesirable to omit the use of the method which can furnish the most accurate information. The value of several physio-therapeutical measures in restoring the function of injured

[2] *Traité des maladies congénitales du coeur.* Par Ch. Laubry et C. Pezzi. Préface par M. le Professeur Vaquez. Paris: Librairie J.-B. Baillière et Fils. 1921. (Roy. 8vo, pp. xv + 335; 100 figures. Fr. 30.)

[3] *Traumatic Surgery.* By John J. Moorhead, B.S., M.D., F.A.C.S. Second edition. Philadelphia and London: W. B. Saunders Company. 1921. (Roy. 8vo, pp. 864; 619 figures. 42s. net.)

limbs is referred to, but the more modern methods are not described in detail. The opinions the author expresses on the treatment of injuries of nerves in which there has been complete division, with separation of the ends, must be frankly stated to be misleading in view of recent experience in this country. The Medical Research Council, after reviewing a mass of evidence, has drawn the conclusion that good results can only be expected in those cases if direct suture of a nerve trunk is carried out; several manœuvres have been devised to make this process possible even when there is a gap of several inches between the severed ends of the nerve.

The book is well printed, but the photographic reproductions, especially those of *x* ray prints, are in several cases lacking in definition.

NOTES ON BOOKS.

DR. KNOWSLEY SIBLEY'S little book on *The Treatment of Diseases of the Skin*[4] has now reached a third edition, which is at once an achievement and a testimonial. It has only grown slightly in size, and remains very convenient to handle. The old characteristics are retained: the first part consists of a general description of methods of treatment, and the second of notes on those skin diseases selected by the author for inclusion, arranged in alphabetical order. Each disease is first defined and then directions are given for its treatment. He does not concern himself with the question of diagnosis. The appendix contains a number of prescriptions, both for internal remedies and local applications. Many of these are no doubt of great utility, but the fault we have to find with the book is that the author does not give any clear idea to the practitioner how to set about dealing with any particular condition. On the other hand, should he be rather at a loss in any difficult case, he is likely to find here some additional method to try which previously might not have occurred to him. The illustrations are all photographs, many of them pairs of the "before" and "after" type; some of the "after" are not entirely convincing. There are also a number of photographs of dermatological curiosities, which, although interesting in themselves, are not very appropriate to a work of this character. We recommend the volume to the seeker after "tips," but it is not calculated to be of much use to the student.

The second edition of *The Laboratory Manual in General Microbiology*,[5] prepared by the Michigan Agricultural College, has been brought up to date by the incorporation of recent methods, such as standardization of media by hydrogen ion concentration and improved technique for water and sewage analysis. The book is a concise well-illustrated account of the methods employed in studying bacteria, and is intended to be used in conjunction with some standard treatise on bacteriology. The first series of exercises designed to teach the student morphological and cultural methods are followed by another dealing with the physiology of micro-organisms. The remainder of the book deals with applied microbiology; air, water, sewage, soil, and milk are dealt with successively, the technique being thoroughly explained. The last section is devoted to animal diseases and immunity, and though it contains well-chosen representative exercises, it is not sufficiently comprehensive to be of much value to the medical bacteriologist. The appendix is well stocked with notes on media making and staining solutions, together with other information of a practical nature.

Professor FERMI'S book on anopheles and malaria[6] gives the general reader who is also a reader of Italian an excellent account of the bases of antimalaria campaigns, or, as he puts it, of "disanophelesization" and "dismalariation." It is written in the form of question and answer, and is practical in its treatment of the subject.

To those interested in the mental processes of a construction engineer engaged in demolishing the bacterial theory of infectious disease and the scientific basis of therapy by vaccines and serums Mr. PEARSON'S booklet on *Fasting and Man's Correct Diet*[7] may be recommended. Others will probably find it less interesting.

The Child's Path to Freedom[8] is the title of an interesting and persuasive little book in which Mr. NORMAN MACMUNN criticizes the traditional system of class teaching in schools, and expounds the ideas and methods upon which he has worked among his boys for some years past. He advocates a complete reform of method in child education, the chief means being the cultivation of an atmosphere of freedom in which the boy teaches himself to concentrate upon his work, just as the young animal learns through play to fit itself for the struggle of life. This notion of using the play impulse for auto-education and self-discipline lies, of course, at the root of the Montessori method; but Mr. MacMunn has travelled a considerable way by himself through the new country of which Dr. Maria Montessori is a pioneer, and he has evidently been impressed on his journey by the method of psychological analysis; so far, indeed, has he gone that he finds the Montessori movement in England threatening to become a narrow orthodoxy. Like many enthusiasts, he writes discursively at times, and in his desire to put things right he hits out at those who seem to obstruct reform. As for the results of "the new discipline," it is as yet too early to form an opinion; but this interesting experiment is now in progress at Tiptree Hall in Essex, and we imagine that inspection by medical men and women would be welcomed.

We have not failed each year since its publication began to praise the Medical Art Kalendar[9] published by the firm of Philip Kruseman of The Hague. It is a wall calendar of twenty-seven sheets, each adorned with a half-tone reproduction of a picture having a medical interest. Some of the pictures favour the alchemist of Teniers (the younger) and the doctor's visit of J. H. Steen, both in the Mauritzhaus at The Hague; another alchemist by the younger Teniers, said to be a portrait of the artist, is less well known. Another portrait is of Ludeman described as a "Kwakzalver," who certainly looks it; the legends are all given in English as well as Dutch, though it was hardly necessary to translate this expressive word, which is well established in our language, though with a different spelling. Several of the pictures reproduced are in the Wellcome Historical Medical Museum in London and some others are from private collections in the Netherlands. A good many of the pictures have to do with extraction of teeth, which may, perhaps, commend the calendar to dentists.

The number of *Brain* issued last week contains the third part of the study of cerebral function in learning, by K. S. Lashley, of the University of Minnesota; a psychological inquiry into congenital word-blindness, by Lucy G. Fildes; and a paper by Kanshi Sassa on proprioceptive reflex and clonus in the spinal frog. The issue contains also a report of Mr. Percy Sargent's presidential address on epilepsy delivered to the Section of Neurology of the Royal Society of Medicine.

[4] *The Treatment of Diseases of the Skin.* By W. Knowsley Sibley, M.A., M.D., B.C.Camb., M.R.C.P.Lond., M.R.C.S.Eng. Third edition. London: E. Arnold. 1920. (Demy 8vo, pp. 252; 24 plates. 12s. 6d. net.)

[5] *Laboratory Manual in General Microbiology.* Prepared by the Laboratory of Bacteriology and Hygiene, Michigan Agricultural College. Second edition. New York: John Wiley and Sons. London: Chapman and Hall, Ltd. 1921. (Cr. 8vo, pp. xiii + 472; 75 figures. 21s. net.)

[6] *Sugli Anofeli e Sulla Malaria.* Professor C. Fermi. Rome: Tipografia Fratelli Pallotta. 1921. (Med. 8vo, pp. 155.)

[7] *Fasting and Man's Correct Diet.* By R. B. Pearson. Chicago Illinois, U.S.A.: Published by the author. (Cr. 8vo, pp. 153.)

[8] *The Child's Path to Freedom.* By Norman MacMunn, B.A. London: G. Bell and Sons, Ltd. 1921. (Cr. 8vo. pp. 163. 2s. 6d. net.)

[9] J. Philip Kruseman, 87, Prinsegracht, The Hague, Holland. Price 6s., post free.

BEGINNING with the January issue, the *Journal of Orthopaedic Surgery*, the official organ of the American Orthopedic Association and of the British Orthopaedic Association, will be published once a quarter instead of monthly.

THE *Berliner klinische Wochenschrift* and the *Therapeutische Halbmonatshefte* will be amalgamated at the beginning of next year, under the title of *Klinische Wochenschrift*.

AFTER a long interval the *Gazeta Medica da Bahia* (Brazil) has resumed publication, entering now upon its fifty-second year, under the direction of Drs. Novis and Sampaio Tavares.

THE publication will be resumed on January 1st, and thereafter monthly, of the *Archives Internationales de Laryngologie, d'Otologie, et de Rhinologie*, which ceased publication in August, 1914. It will be edited by Drs. F. Lemaitre and L. Baldenweck. The address of its publishing office is 120, Avenue Victor Hugo, Paris, and the annual subscription is Fr. 60.

THE STANDARDIZATION OF SERUMS.

THE conference in London called by the League of Nations Health Committee to discuss the standardization of serums and serological tests concluded its business, as stated last week, on December 14th. The members were the guests of the British Government at luncheon on the last day of the meeting, when Sir ALFRED MOND, Minister of Health, in welcoming the visitors, said that the delegates had not been drawn exclusively from countries which were members of the League. This was an allusion to the presence of two delegates from Germany, and also of a United States representative, who, although not delegated from his country to the conference, was present as a member of the Office International d'Hygiène Publique.

In responding to the toast of "The Guests," Dr. THEODORE MADSEN, Director of the State Serum Institute at Copenhagen, president of the conference, referred to the active part the British Ministry of Health had played in building up the health work of the League. It was quite certain that without the assistance of a most distinguished member of the Ministry, Dr. G. S. Buchanan, Senior Medical Officer of the Ministry and Vice-President of the Health Committee of the League, the health organization would not have been completed so soon nor so efficiently. They were also indebted to the Ministry of Health for lending Dr. Norman White to be Chief Epidemic Commissioner of the League.

The present conference represented one of the branches of international health work which the Health Committee had found themselves able to take up immediately. It had brought together many men of science from different countries who had not been able to meet for a very long time. His chief regret was the absence of a colleague from Russia (Professor Tarassivitch). They were specially fortunate in receiving such great assistance from the Medical Research Council. There had been a great need for a uniform unit for antitetanus and antidiphtherial serums, and now, by the co-operation of British, French, German, American, and Italian scientists, complete agreement was practically certain to be obtained at a time not very far distant. The discussion of the serological diagnosis of syphilis, a subject suggested by the British Ministry of Health, had led to a number of institutions agreeing upon a uniform plan of work along this line. The methods of standardization of dysentery, meningococcus, and pneumococcus serums had been discussed, and further work in common had been planned. Again, by international co-operation it was hoped to arrive at what might be called a bacteriological geography of the different types of meningococcus and pneumococcus. The conference was attended by three members of the League of Nations Health Committee or Office International d'Hygiène Publique (Dr. O. Velghe of Belgium, Dr. G. S. Buchanan of the Ministry of Health, and Dr. Rupert Blue of the United States). The foreign delegates to the conference were:

Austria: Dr. R. Mueller, Professor of Serology, Vienna.
Belgium: Dr. Renaux of the Pasteur Institute at Brussels.
France: Dr. Louis Martin, Dr. Dopter, and Dr. Cotoni, of the Pasteur Institute.
Germany: Professor W. Kolle, of the Institute of Experimental Pathology, Frankfort; and Professor H. Sachs, of the Cancer Research Institute, Heidelberg.
Great Britain: Sir Frederick Andrewes, Dr. H. H. Dale, and Professor W. Bulloch, members of the Standards Committee of the Medical Research Council.
Italy: Dr. B. Gosio, Medical Officer of Health of Rome.
Japan: Dr. Miyajima, of the Kitasato Institute.
Poland: Dr. L. Hirszfeld, of the State Serum Control Institute, Warsaw.
Switzerland: Dr. R. Doerr, Professor of Hygiene and Bacteriology, Basle.
Secretaries: Dr. L. Rajchman, Medical Director, League of Nations, and Dr. Norman White, Chief Epidemic Commissioner of the League.

Among the British scientists assisting the conference were: Representing the Medical Research Council, Sir Walter Fletcher, K.B.E., M.D., F.R.S., Professor G. Dreyer, M.D., Oxford, Dr. M. H. Gordon, Professor J. C. G. Ledingham, F.R.S., Professor P. Fildes, and Dr. S. R. Douglas; representing the Ministry of Health, in addition to those already mentioned, Colonel L. W. Harrison and Dr. A. Eastwood; representing the War Office, Sir William Leishman, K.C.M.G., F.R.S.

The business of the conference was in part conducted by subcommittees, and the following were among the recommendations made:

I.—DIPHTHERIA AND TETANUS.

The Committee on anti-diphtheritic and anti-tetanic serums, which met under the chairmanship of Dr. Louis Martin, considered it both possible and desirable to fix for both an antitoxin unit which could be generally accepted and acknowledged as an international unit.

Diphtheria Antitoxin.

Two units are used at present—(*a*) the German, determined in the Frankfort Institute for Experimental Medicine, following the Ehrlich method with the standard serum, and (*b*) the unit determined in the Public Health Bureau at Washington.

To determine accurately the very small differences between these two units the standard serums and test toxins will be supplied to the various participating institutes both by the Frankfort Institute for Experimental Medicine and the Washington Public Health Bureau. The result of the experiments performed at the several laboratories represented will be sent to the Danish State Serum Institute, which for this purpose will act as the central laboratory.

Tetanus Antitoxin.

At present four methods are employed to describe the potency of antitetanic toxin. The points of departure of the four methods are different, and experiments have not yet determined the exact relation between the units thus determined. It is considered desirable and possible to establish a common measure by an agreement on a single standard antitoxin, using the principle adopted in connexion with the standardization of antidiphtherial serum. The participating laboratories must first fix experimentally the relations which obtain between the four units at present employed, and with this object an exchange of serums and toxins will be made in order to secure the necessary comparative experiments. The precise details of the experiments will be recorded and the documents will be sent to the Danish State Serum Institute, which for this purpose will act as the central laboratory; the results will be discussed at a subsequent conference.

II.—MENINGOCOCCUS AND PNEUMOCOCCUS.

(a) Antimeningococcus Serum.

The recommendations of this Committee, of which Dr. Dopter was chairman, were as follows:

1. With the object of obtaining full information regarding the various types of meningococcus the several laboratories mutually agree to exchange agglutinating serums and strains of meningococci, the latter being obtained exclusively from the cerebro-spinal fluid of meningitis cases.

2. Macroscopic methods will be employed in agglutination investigations, the bacterial emulsions having been kept for 24 hours at a temperature of 37° C., without prejudice to other methods which may also be employed. Investigations into the saturation of agglutinins may be carried out by any method.

3. In the existing state of our knowledge and without prejudice to the opinions of the several institutes participating in these researches and who are not represented at this conference, it appears to be difficult to determine the therapeutic value of antimeningococcus serum by measurement of agglutinins, sensitizers (senibilisatrices), and opsonins.

4. Fresh experiments will be undertaken in the various laboratories regarding the value to be attached to the determinations of anti-endotoxic and bactericidal power.

(b) Antipneumococcus Serum.

1. A mutual exchange of cultures of different strains of pneumococci.

2. Researches into the agglutinating power of antipneumococcus serum is of no value in determining its therapeutic power. The best method of titrating the serum is the measurement of the bactericidal power in animals, preferably mice.

3. New investigations will be carried out with regard to (*a*) the best method of inoculation—peritoneal or subcutaneous—for the titration of serum; (*b*) the selection of methods—preventive or simultaneous—for the injection of serums and cultures; (*c*) the monovalence or polyvalence of the different serums.

III.—DYSENTERY.

The Committee on antidysentery serum, of which Professor Kolle was chairman, came to the following conclusions:

1. It was agreed that it would be advisable that the different institutes, laboratories, etc., should exchange samples of serum and toxin, and that further experiments should be carried out, using (*a*) different methods of titration, (*b*) different species of animals.

2. There was general agreement that, in testing the potency of serums, the antitoxin, especially the anti-endotoxin, should be estimated, and that this could be accurately carried out equally well with dead bacilli as with toxin. In reference to the method of testing the dysentery serum on mice, it was recommended that a series of tests should be carried out with the standard serum, which the Frankfort Institute would supply, comparing them with methods in use in the various institutes, and that a report on these experiments should be presented at the next conference. It was considered that it would be advisable also to test the antimicrobic power of serum, employing living bacilli for the test.

3. It was unanimously agreed that in the preparation of experimental anti-Shiga serum the horses should be inoculated with the *B. dysenteriae* (Shiga) only.

4. It was agreed that the question of the preparation and the standardization of serums prepared from various other atoxic

dysentery bacilli should not be discussed, as the actual state of our knowledge does not permit us to give a decisive answer.

IV.—SERODIAGNOSIS OF SYPHILIS.

The recommendations of this Committee, which sat under the chairmanship of Professor Bulloch, were:

1. In a certain number of institutes the Wassermann reaction as practised in them should be compared with the methods of Sachs-Georgi, Meinike III, and Dreyer-Ward ("Sigma").
2. The number of cases examined in each institute should be 1,000 of undoubted syphilis and 1,000 in which syphilis could be excluded as far as possible.
3. It is also recommended that the different methods should be compared on about (one and the same) 50 cases out of the 1,000, at different stages of the disease. These repetition tests should be carried out on at least three or four occasions in the course of the disease, and it is recommended that the 50 cases should comprise especially suspected syphilis of the nervous system and of the eye.
4. The worker should be allowed the opportunity of studying the respective authors' own methods in the respective institutes.
5. The places where the tests are to be carried out should be efficiently equipped and the serologist should be in as close touch with the clinician as possible.
6. For the flocculation tests the serologist should use only extracts prepared or controlled by their respective authors.
7. The samples of serum to be tested should be known only by numbers, and the serologist should not have access to the clinical or pathological records until the whole series of tests is concluded, but the chief of the laboratory may cause any serum to be retested without making the serologist aware of the fact.
8. A preliminary report should be submitted after the first 500 tests have been concluded.
9. All reports on tests should include information as to (*a*) reliability of the method, (*b*) complexity of technique, (*c*) relative consumption of time by the method, (*d*) expense, (*e*) ease and accuracy with which the reaction can be observed, (*f*) percentage of dubious results, (*g*) the extent to which the method yields quantitative results.

It is recommended that all the results should be finally submitted to the State Institute for Seropathy of Copenhagen.

THE HEALTH OF ELEMENTARY SCHOOL CHILDREN.

THE number of children in average attendance at the public elementary schools of England and Wales during the year 1920–21 was 5,187,000. Approximately 2,400,000 of these were medically examined during the year, in three groups—at 5 years of age, at 8 years, and at 12 years, or when they are commonly spoken of as entrants, intermediates, and leavers. The medical staffs of the 316 local education authorities number about 800 whole-time medical officers, many of whom are also medical officers of health, and 1,900 school nurses; there are also 730 private practitioners employed part time, both in the schools and in the 900 school clinics, but there are many others engaged in the 391 hospitals which undertake some of the school work. Besides the regular examination of the children at the stated periods of their school life, any sick and ailing children are specially examined, and these examinations account for some 30 per cent. of the total number of examinations.

Commenting on the great scope of the work, in his annual report,* the Chief Medical Officer remarks that three disadvantages of State intervention in this respect were anticipated in the early days—namely, that such action would pauperize the parent and destroy the sense of parental responsibility; that it would impose an unremunerative burden on the ratepayer; and that it would have a detrimental effect on the legitimate practice of medical men. The history of the school medical service has dispelled these fears. Parental responsibility has been stimulated, the investment is yielding a high interest, and medical treatment has been sufficiently safeguarded to secure the support and co-operation of the medical profession. The school medical service is not duplicating the work of the medical practitioner, but supplementing and enhancing it. Further, there has been an important indirect effect in the entry of the medical officer to the schools: it has taught the educationist that the child must be handled as an individual and not in the bulk. It has given a new understanding of the child as an individual, an understanding which cannot fail in the future to affect the whole scheme of education.

The growing interest taken by teachers and parents in the health of the children is evidenced in the reports of local school medical officers. Dr. Johns of Banbury writes:

"The teachers do everything possible to facilitate the satisfactory and efficient work of school inspection. . . . It is largely owing to the interest taken by the teachers in the health of the children under their care and the trouble they take in following up the work of school medical inspection, that the larger proportion of children obtained treatment for their defects, for a teacher who has lived for years in a village, and knows all the parents, has very great power in persuading them to have their children's defects remedied."

The number of parents attending the routine medical inspections varies considerably throughout the country. At Northampton the percentage was 37.3, in Essex 44, at Blackpool 52.6, at King's Lynn 68.5, at Margate 80. The reports comment appreciatively on the work of many voluntary bodies, such as the Children's Care Committees, National Society for Preventing Cruelty to Children, Invalid Children's Aid Association, Children's Country Holiday Fund, the Fresh Air Fund, the Guild of the Brave Poor Things, and such other guilds of help.

It is now becoming the custom of the school medical officers to undertake certain collective investigations into the health of their charges. For the current year it is suggested that special inquiry into one or more of the following matters should be made:

1. Dull and backward children. The incidental causes of the conditions and the manner of treatment.
2. The supervision of abnormal children.
3. The incidence of rickets.
4. The effects of industrial processes on the physical welfare of elder children and adolescent pupils.
5. The incidence of neuropathic conditions in public elementary schools.
6. A comparison of physical conditions in elementary and secondary schools.

Nursery Schools.

The recent opening of the extension of the Deptford Nursery School by the Queen has caused some inquiry as to the nature of these schools. Up till now as many as twenty-seven have been established in various parts of the country; of these three have been closed. Most of them are in London, but Birmingham, Bradford, Darlington, Derby, Leeds, Manchester, Salford, and Scarborough have established such schools. At present the Board can only entertain proposals for the establishment of further schools of the kind in special circumstances and on an experimental basis where existing buildings are available. Variation in the type of building is desirable in order to learn from actual working which form of school most nearly approaches the ideal; but in any case they should be unpretentious and simple both in form and equipment. The Deptford school provides open-air sheds closed on three sides only, put up on unoccupied land. The great danger to be guarded against in these schools arises from the risk of infection of epidemic diseases to a body of children at a highly susceptible age—a fact that those connected with children's hospitals know only too well. It is therefore desirable that these schools should be very small, and extensions leading to the gathering together of a hundred or more infants should be avoided. It appears that the Board required that due safeguards against this risk should be taken before the extension of the Deptford school was allowed.

The report states that there is already abundant evidence that parental interest is stimulated and increased by the obvious physical and educational improvement of the children under the skilled care of the nursery school superintendent. The classes afford a practical demonstration to parents, young teachers, and elder girls of the value of right methods of training of the youngest children.

School Absences.

Some investigation has been made into the causes and frequency of absences from school. Broadly speaking, it is no longer necessary to drive children to school. Among other considerations, the opportunity for the employment of children for profit has gone; in many respects the school has become for the child a more attractive place than formerly, and the efficient work of the school attendance officers has regularized school attendance and made it the recognized habit of the community. There were four points in the inquiry: (1) What is the percentage of total absences? (2) What is the percentage of absences

*Annual Report of the Chief Medical Officer of Education, 1920. London: His Majesty's Stationery Office. 1921. Price 6s.

due to diseases? (3) How much time is lost? (4) What are the principal diseases leading to absences? The answers show that only a minority of the children are absent on grounds other than medical. Truancy is rare. The percentages of absence vary from 7 to 10. Of these, some 75 to 86 per cent. were absences due to illness. A large proportion of the absences are for short periods of one-half to one day. Of causes, common colds, coughs, and lung conditions head the list, next come infectious diseases. Very accurate returns have been made in London of absentees of periods of three months and upwards; the nature of the illnesses in order of frequency were: Tuberculosis, rheumatism (including heart affections and chorea), nervous disorders, eye complaints, anaemia and debility, ringworm, and lastly, skin affections.

The Findings of Medical Inspection.

Last year some 2,400,000 children were examined by the medical staff, and of these no less than 47.9 per cent. were found to be suffering from defects. This percentage includes all degrees of defect, major and minor; some required active treatment, others were recorded for further observation. In London the actual percentage referred for treatment was 39.4. A most valuable comparative return is given on page 47 of the percentages of defect found in four different sections of the community.

The four groups taken are twenty-four industrial areas, twenty-four residential towns, twenty-four rural areas, and London. The total number of children whose physical condition comes into the count upon which the table is based is 746,411, fully sufficient to give a true picture. The striking feature of the table is the distinction of the children in the residential towns; under nearly every one of the twenty-two heads in which the defects are scheduled these children show a smaller, and often a distinctly smaller, degree of defect than the children in the other three classes. The children of the rural areas, contrary to popular ideas, do not show up to advantage; they are never so good as the children of the residential towns, and they are scarcely ever better than the children of the industrial towns or of London; indeed, in diseases of the throat and nose they show the highest return of all the four groups. In dental disease they show an equivalent figure to that found in London and the industrial towns—namely, 23 per cent.—a figure much larger than that found in the residential towns, where dental defects totalled only 14 per cent. The rural children had a lesser degree of visual defects than the industrial towns and London, but they showed more of this defect than the children of the residential towns. Valuable reports in this connexion are furnished by Dr. Newsholme of the North Riding of Yorkshire, and by Dr. J. B. Lowe of Birmingham.

"Dirt," says Dr. Hamer of London, in his report, "remains the greatest enemy with which we have to contend." Despite progress, a large number of parents still appear to consider that the presence of nits and vermin in the head reflects in no way on the standard of cleanliness among their children, but is simply a natural phenomenon. Uncleanliness of serious degree imposes a handicap on the progress of the child, and often inflicts upon him acute physical discomfort. No child can be said to be deriving reasonable benefit from his school life if he is to be found in the school usually in a verminous condition. Medical inspections in London, however, show that there has been an improvement of 30 per cent. in seven years in verminous conditions, and this improvement has been accelerated during the last three years, during which there has been a great forward campaign. The country districts are not exempt from the plague of dirt. Dr. Martin of Gloucestershire writes, as regards pediculosis: Of 32,000 children no less than 14 per cent. were infected; but that is half the percentage of what was found ten to twelve years ago. He states that the present procedure is cumbrous, slow, and unsatisfactory. The time has arrived when simpler and more satisfactory action should be practicable. The simplest course would be to make it "an offence for a parent to send a child to school in an infective condition (including pediculosis) after notice has been given to the parent that such child is infectious." Certainly the time has come when the clean children of the schools should be protected from the constant liability to infection which the presence of a few persistently dirty children present.

Medical Treatment of the School Child.

The feature of the report is the evidence of the growth of school medical treatment. At its inception it was a very small affair. In 1910 there were only 14 school clinics, and London contemplated provision for the treatment of 25,000 children. In 1920 there are 900 school clinics, and London makes provision for the treatment of no fewer than 198,000 children. On page 69 is given a tabular return of the numbers of attendances made at school clinics by the children of twenty-four areas for each year since 1914. In those four years there has been an enormous increase from 700,000 to 2,800,000, or over four-fold. These figures are remarkable. In considering them the Chief Medical Officer makes the following observations:

"Attendance at a clinic is not a form of entertainment; such a place is visited only of necessity. Again, it is clear that these attendances do not mean that disease is more prevalent, but that it is being more treated. Nor do they mean that children prefer school clinics to private practitioners, for in many cases private practitioners form the staff of the clinic. The common means available to the parent for obtaining medical treatment are the private practitioner and the hospital. But the private practitioner charges a fee, and is often too much engaged to give careful attention to children's ailments; and the hospital is overcrowded, and does not lay itself out to accommodate children. The out-patient departments of our large hospitals are not attractive places, and a parent may be kept waiting for long periods. On the other hand, the school clinic is a popular institution. It is attractive and well equipped. The treatment is prompt and encouraging. The school nurse is *persona grata*. The doctor, the parent, the teacher, the nurse, the school attendance officer, and the care committee all combine to secure attendance of the child. The usefulness of the clinic indicates what is possible in this direction, for the great mass of the people, and the hospitals, and some private practitioners have much to learn from its overwhelming success. Indeed, its very success may be its hurt. For an overcrowded clinic is an inefficient one; and a clinic devoted exclusively to children, to treatment of crowds of children, may lose its preventive and educative functions."

We give this paragraph as it stands. There is a good deal of special pleading in it. The contrasts are manifestly overdrawn. There are statements on both sides of the picture which can scarcely be accepted without further examination. In any case the true reason of the great increase in attendances of children at clinics has nothing to do with the likes or dislikes of the children, and little to do with the likes or dislikes of the parents. It is wholly a matter of organized pressure—pressure all along the line, from the examination of the child to the end of the course of treatment. This pressure may be justifiably in the best interests of the child and of the community. But the fact that this pressure succeeds in swelling the clientèle of the school clinics is no evidence of "popularity" as against any other means of medical treatment, and the use of such data in this sense argues a failure to recognize the facts of the conditions.

Section I of the Local Education Authorities (Medical Treatment) Act, 1909, requires:

"That where any local education authority provides for the medical treatment of children attending any public elementary school under Section 13 of the Education (Administrative Provisions) Act, 1907, there shall be charged to the parent of every child in respect of any treatment as may be determined by the local education authority, and in the event of payment not being made by the parent, it shall be the duty of the authority, unless they are satisfied that the parent is unable by reason of circumstances other than his own default to pay the amount, to require the payment of the amount from the parent, and any such amount may be recovered summarily as a civil debt."

The Board of Education recently asked local authorities what are the principles followed by them in determining the charge to be made to parents under the Act, and from the replies of certain authorities a return has been compiled showing the fees charged for various forms of treatment. The extraordinary variation in these replies indicates that there is no common policy in the country, and there is little indication of any reasonable attempt to carry out the direction of Parliament. The report adds that:

"The wise and appropriate administration of this Act calls for the careful consideration of each authority. It is obvious that where the patient can pay something towards a medical treatment he should do so. Clearly the intention of Parliament was to place upon the authority the responsibility of securing payment 'unless they are satisfied that the parent is unable, by reason of circumstances other than his own default, to pay the amount.'

"The inspected school child who requires treatment should always be referred to the private practitioner when he is willing or able to undertake the necessary treatment for minor ailments, presence of vermin, ringworm, otitis media, adenoids and enlarged tonsils, defective vision, or dental caries, and when the parents of the child can pay the cost of the treatment. The establishment of the school clinic does not abolish this principle, it merely provides the convenient equipment for dealing with many children."

This section deals very fully with the arrangements that are desirable in the treatment of tonsils and adenoids. The utmost care is necessary in the selection of cases for operation; there must be assurance that the condition is not a temporary inflammatory enlargement, and that the continuance of the enlargement is detrimental to the health of the child. Further, there must be strict compliance with reasonable requirement for the after-care of cases where operation has been performed. "For children to be left to recover after operation, with bleeding throats, on the floor of a hospital waiting-room, or to be sent home suffering from haemorrhage or vomiting in a tram car, or to be allowed on the day following operation to play in the street and eat anything they like is obviously improper." As a suitable scheme of arrangements there is reprinted the instruction drawn up by Mr. Herbert Tilley, of University College Hospital, London, for the use of his patients. An account is also given of the Cyril Henry centre at Woolwich for the operative treatment of these conditions, and where the children are retained for two days after operation.

The organization of school ophthalmic work is discussed in some detail and largely along the lines of a paper by Mr. Bishop Harman recently published in these columns (BRITISH MEDICAL JOURNAL, 1921, vol. i, p. 792). The conclusion on this matter is as follows:

"Apart from any consideration of ease and comfort of life, proper attention to visual defect during the school period will ensure that the young worker will enter industrial life well equipped for the strain of regular effort required of him. His earning power and continuity of service will be enhanced thereby, and any expenditure which will give him proper use of his eyes finds its justification in this fact. Here indeed is a force making for economy and efficiency in industrial life."

Dental Disease and Treatment.

That the incidence of dental defect among school children is widespread, indeed almost universal, is admitted on all sides. Yet the conditions of dental work have been such that there has been no real possibility of overtaking the work. There has been a shortage of both dental practitioners and nurses. Owing to the passing of the Dentist Act of 1921 the shortage of the former may be remedied. The extent of dental defect can be judged by the figures of the returns received from 121 areas, representing an average attendance of over two and a half million children. These show that of 580,000 children inspected by the school dentist not less than 407,000, or 70 per cent., were deemed to be sufficiently serious in respect of dental decay to be referred for treatment, but scarcely more than one-half of these actually received treatment. Commenting on the arrangement of dental clinics, the necessity of saving every moment of the dentist's time is pointed out; at present much time is wasted either through faulty arrangements in the handling of children or in failing to record fully the results of inspection. In many areas no chart is made out until the child attends for treatment, whilst in a few others providing treatment there is no preliminary inspection at all.

"Another prolific source of wasted time is the treatment of the temporary teeth to the neglect of the permanent. In many areas the number of temporary teeth filled during the year actually exceeds the number of permanent. In fact, in some clinics no discrimination would appear to be made between the two groups. This is an extremely short-sighted policy; for if a child is to leave school with a sound and complete dentition, it is of the utmost importance that the first sign of disease or misarrangement in the first permanent teeth should be promptly dealt with. Inspection should, if possible, be made sufficiently early to permit of any necessary treatment being undertaken in time, and since the 'six-year molar' is often in place even before five years of age, and sometimes badly decayed by the time the child reaches six, it follows that the nearer to five years of age the inspection takes place (even in the present difficult times), the more hope is there of making it possible to the child to reach the school-leaving age with no permanent teeth extracted."

The Abnormal Child.

From the returns of the year it is estimated that the total number of ascertained abnormal children in England and Wales is 164,500, exclusive of dull and backward children. The mentally defective head the list with 37,000, not counting 6,500 epileptics in this total. Next follow the cripples with 36,000, those affected with pulmonary tuberculosis number 20,000, the blind and the deaf account for 6,000 each. The total number of these children in special schools is about 34,000, leaving over 100,000, or about 2 per cent., of the whole child population unaccommodated. To this estimate must be added the tale of the dull and backward children, estimated at 10 per cent., so that the full number of abnormal children reaches a total of some 12 per cent. The great difficulty met with in these children is the diagnosis of mental defect. The definitions adopted in the various statutes are of a legal or sociological nature, and do not afford a clinical basis of diagnosis. It is pointed out that mental defectives offer every kind of variation, and are alike in one respect only—they all exhibit absence or lack of memory power. After some consideration of the various tests in vogue for the measurement of mentality, the peculiar mental characters of the various types of defects are considered.

The blind child is commonly very backward on admission to a school; at the age of 7 or 8 years he may be extremely timid and incapable of fastening his own clothes; his talk may be mere baby talk, and unless care be taken it may be that such a child will be certified as mentally defective. In striking contrast to this is the absence of fear shown by the deaf child, although, when neglected, these show no better advancement in general capacity than the blind child. The improvement both these classes show after training at appropriate schools is dramatic in the extreme. The crippled and tuberculous children, apart from general retardation, show no well ascertained signs of psychological abnormality attributable to their defect. During the intervals of freedom from fits the epileptic may be mentally normal, subnormal, or supernormal. The course of the disease may cause him to degenerate into a state of mental deficiency or imbecility, in which his case resembles that of subjects suffering from those defects.

The dull and backward child presents a serious problem. Mr. Cyril Burt, referring to the results of an investigation into the educational ability among the entire body of children in a representative London borough, points out that barely one-half (46.4 per cent.) are assigned to a grade or standard assumed to be normal for their age. Of the subnormal, a large proportion are but little behind their proper level, but at least 10 per cent. are from 15 to 30 per cent. retarded, and form the group of definitely dull and backward children. These present a formidable by-product of the educational system. Correlated with this backwardness there is often some physical defect. Dr. Clarke of Cornwall found that the following stand out as important: Enlarged tonsils and possibly nasal obstruction, squint, malnutrition, defective hearing, and various diseases of the circulatory system; while defective vision, more particularly confined to one eye, seems to be correlated with retardation. Educationally the backward child is a misfit in our present system. The school standards do not fit him, and without special provision he has a tendency to become incapacitated and unemployable. A number of areas have provided special classes for these children in which the ordinary curriculum is moderated in requirement, and a liberal substitute of manual training is offered.

The Provision of School Meals.

There are some signs of a falling off in the nutritional condition of the school children during the past two years. The set-back is not serious in degree, nor is it universal, and the returns show immense improvement on 1907 and even 1913. But it is not satisfactory that 8 or 10 per cent. of school children should be ill nourished, a figure which in some districts is greatly exceeded. Four things may be done with regard to these children—

(1) The school doctor may prescribe for the child a suitable dietary and advise the parents accordingly, and this is the usual course. (2) The authority may provide milk or cod-liver oil for certain children, free or at cost price. (3) Canteens may be established in connexion with schools, as was done for the

great munition works during the war. (4) The school medical officer may advise the authority to put into operation the Provision of Meals Act for certain children attending their schools. This Act was put into operation in 137 local areas last year; 148,000 children were fed, a number more than twice as large as the numbers fed in the years 1916 to 1919, but much smaller than the average of the preceding four years.

There are indications that the local authorities are exercising care in this matter. Note has been made that when the meals are continued during the holidays there is a marked drop in the number of children receiving free meals, from which the inference is made that the free meal was not thought worth the trouble of going for it, or in other words, that the parents were not in such circumstances that a free meal was needed. At Stoke-on-Trent applications for free meals by parents are required on a printed form, and to that is attached the clause of the Act which states that the cost is to be charged to the parents where they are able to pay. The head teachers of the schools of the district report a number of instances in which parents have withdrawn their application on their attention being drawn to the section of the Act printed on the application form.

Kent has instituted a promising experiment to meet the conditions of children coming to school from distant parts. A number of canteens have been established in the schools at which these children may obtain hot meals at cost price. So far the scheme has been an entire success. It has obtained the widest help from voluntary workers, it saves the rates, improves the average attendance, it nourishes the child, and it lays the responsibility upon the parent. For many rural districts the scheme may be found to solve a difficult problem.

Juvenile Employment.

The provisions of the Education Act of 1918 and of the Employment of Women, Young Persons, and Children Act, 1920, have well nigh extinguished the employment of children under school age. But there were in 1920 in England and Wales as many as 27,967 children under 14 years of age certified for half-time labour, and a further number of 64,141 for whole-time factory labour, a total of 92,000 children employed under 14 years of age. Upwards of 42,800 of these children were in Lancashire, 22,600 in Yorkshire, 5,500 in Staffordshire, 4,300 in Cheshire, 2,100 in Wales, 1,500 in Warwickshire, and only 126 in London. The remainder are returned as distributed in "the rest of England."

The centre of the inquiry is now moved to the leaving age of 14, when the school medical officer will be called upon to determine the effect of the activities of the school medical service upon the child during school life, and to state in clear and intelligible terms what part the child is able to play in the industrial life before it. The importance of this examination of children before they reach the leaving age is shown by the return of the rejections of children on medical grounds by the certifying factory surgeons. Upon these surgeons falls the duty of certifying the fitness of children under the age of 16 years prior to their admission to the factory. The children disallowed on medical grounds numbered in all 7,992 out of a total of 11,639 rejections in the United Kingdom—that is, they constituted 68 per cent. of the rejections. The remaining rejections were: On account of age 397, want of evidence of age 3,071, and other non-medical reasons 178. Of medical grounds of rejection, want of cleanliness heads the list for nearly half the children; next comes defective vision or disease of the eyes.

These figures show that approximately 2 per cent. of the children leaving school were rejected by the factory certifying surgeons as medically unfit, yet all these children had been under the care of the school medical service. The maladies for which they were refused employment must, therefore, have been overlooked, or though detected, unremedied, or misdiagnosed by the school doctor or the certifying surgeon, or, though correctly diagnosed, disregarded by the parent or the local education authority, or finally, contracted since they had left school. In any case there is an indication of a leakage the source of which should be investigated by the authorities concerned.

The report concludes with certain appendices. Appendix A is a tabular return of the school medical service of each education authority. Formerly the number and character of the medical personnel was indicated and furnished useful information, there is now given only the name of the chief school doctor, who is commonly the medical officer of the area. It would be convenient if the earlier fuller information were restored. Appendix B gives information concerning prosecutions instituted by local education authorities. Appendix C is a most interesting inquiry into a new scheme of physical classification devised by Professor G. Dreyer of the Department of Pathology of the University of Oxford. This scheme should be investigated practically by every school doctor, for it promises to be a most valuable indication of physical fitness.

Finally, we might call attention to the altered price of the report. It is now 6s. a copy. Formerly it ranged from 1s. to 1s. 8d., and for reports of greater bulk even to twice the number of pages. Evidently the Stationery Office is charging "blue books" at their cost instead of at a nominal sum representing little more than the cost of the paper. It is to be hoped that the increased price of the report will not lessen its circulation.

WILLIAM CLIFT'S DIARY.

SOME contemporaries insinuated that William Clift, Conservator of the Hunterian Museum from 1800 to 1842, was a natural son of John Hunter, and in an early *Lancet* he is described as making his appearance among the distinguished audience at a Hunterian Oration "looking more like John Hunter than ever." Inasmuch, however, as Mrs. Hunter introduced young Clift into the Hunter household at Leicester Square, having, as it were, received him from a lady at Bodmin whose favourite artistic prodigy the little boy had been, this scandalous and picturesque theory has but small support. From sketching in chalk on his Cornish patroness's kitchen floor, he was early promoted to the position of museum artist, amanuensis and general utility man to John Hunter himself, and, coming to know his great master and to admire his genius and his transparent honesty, he was able in time to hand on the full Hunterian tradition to the new College of Surgeons of England in a new century. A book that has probably never yet been written about, since for a number of years it lay out of sight in a storeroom at the College, is Clift's Diary. It is in some thirty volumes, and covers the period 1811–41. Each volume is one of Richards's "Diaries" for any given year, the size is quarto and the paper is of that excellent kind only now used in *éditions de luxe*. Clift gave three shillings for his diary at each New Year, and solemnly recorded the fact of the purchase in an early page of the book. He writes a beautiful clerkly hand of the eighteenth-century type, which suggests a training in drawing and design, and uses the irregular forms of spelling of an age not yet confined to set rules of orthography. It is a pleasure to read these old MS. notes and daily jottings of a man who in his generation served the College and the memory of a great man with touching singleness of heart and untiring industry and knowledge. At first sight the Diary does not appear to contain any very important entries; we are confronted during successive weeks with homely details of small expenses—items recording fourpences and twopence ha'pennies spent for string, glue, tintacks, and paint brushes used in the museum. But even among these little accounts appear more interesting facts, and we learn much about coach hire, porterage, and outlays for refreshments, suggesting that the labourer did not go dry or hungry, and about the very moderate rates of pay current in an age when the purchasing power of the sovereign was often ten times what it is at present. Thus, on June 27th, 1811, we find the conservator "packing preps at the London Hospital. Bread and cheese and beer while packing, 2s. 10d." The year 1811 was very busy, for the whole of the Hunterian Collection was in process of transference from the house of "Mr. E. Jenner," adjacent to the college building, where it had been deposited in 1806 after its removal from Castle Street.

"Sunday 10 [March, 1811] Sir Wm. Blizard, Mr. Cline, and Mr. Home met at the Museum on account of arranging Cases."

March 12. "The Giant's case to be heightened to admit the skeleton." A letter from a Mr. Elers in a later diary mentions that the giant's (O'Bryan's) mother was a short stout woman, but that nothing could be found out about his father.

March 26. "Removed stuffed animals into College house out of the way."

March 29. "Carrying in Dry Diseases, &c., into College house, &c., &c., for a sale of 31 lots by Mr. Creaton."

May 1. "Nails for green cloth examination table 2d."

May 2. "Mr. Harvey of St. Bartholomew's Hospital brought Ten Gentlemen, Students at that Hospital, to the Museum." These were probably the first visitors to the Museum apart from Members of the Court of Assistants or of the College staff.

May 3. "Mr. Hawkins [Master in the inaugural year of the College, 1800] and his friend called to see the Museum," and there arrived "A Mummy in a Glass case from Thebes," which Anthony Carlisle subsequently unrolled before a select audience.

On May 17 there came the first American visitor, "a friend of Sir W. Blizard's, to see the Museum."

On the 25th came the widow of John Hunter with Mrs. Campbell (Agnes Hunter).

July 12. "Received the Ostrich from Exeter Change, for which Mr. Home paid Mr. Polito's man £5 5s."

Later, arrived a lama at the price of two guineas.

The Museum, now fully installed, was first opened to visitors for two days weekly on May 18th, 1813. On June 11th, 1816, "the Museum opened to visitors for June, July, and August." Clift seems to have made a point of showing visitors round the collection, then, as now, unrivalled. In his zealous, unaffected way, he gave his explanations to all and sundry, to students as well as to distinguished laymen. Among the former we may imagine John Keats to have been included, for we know from the College books that in the year 1816 a ticket was issued to him for Sir William Lawrence's lectures, which lasted, as Clift notes, from March 21st to May 13th, when the fifteenth and last lecture was delivered. The second lecture was, "On the Various Theories concerning Life, at various periods of the world." This may have excited comment, for in 1826 Lawrence, we know, got into difficulties in a publication held by his opponents to be disrespectful to "the dignity of man." Another notable course of lectures that year was from Abernethy, who was opposed to Lawrence's materialistic views. Our discreet diarist, however, never offers comment or criticism on the ideas or utterances of the Court of Assistants, and we only very rarely obtain a glimpse of his private opinions, as when he notes that Mr. George Shaw, the zoologist, to whom the College presented a gold tea and coffee service, was "a dunce." Shaw's crime may have been that of getting others to do his business for him in the many volumes of his finely illustrated treatise on Natural History, the plates of which are manifestly not his own work. Clift hated plagiarism, and that the services of literary ghosts should go unacknowledged. Hunter was, in a sense, ghost to Sir Everard Home, and Clift more than suspected the latter of using Hunter's notes and then destroying them. Home thus built up a high reputation which was not properly his, and Clift never forgave him. When Home, driving with him in a post-chaise, confessed to his destruction of the Hunter papers in 1823, he was so taken aback that he could only stutter: "Well, Sir Everard, there is but one thing more to be done, that is to destroy the collection." The death of Home (September 1st, 1832) is recorded by Clift in the Diary by the insertion of a biographical notice, quoted from a journal, at the end of which he writes grimly, in brackets, "*Sic transit gloria mundi.*"

He did not attend Sir Everard's funeral or that of Sir Astley Cooper, but on Sunday, January 7th, 1821, we read, "Mrs. Hunter died this morning. Aged 79." Clift calculates that she was twenty-four years younger than John Hunter at the time of their marriage. She was buried at noon on January 15th, the mourners being Dr. Baillie and Sir Everard Home (brother), William Hunter Baillie and William Clift, and two other gentlemen, of whom one was a painter. These were conveyed in two mourning coaches from Mrs. Hunter's house in Holles Street, Cavendish Square, "a white house," says the diarist, "east side above the middle." The coffin was buried in a vault under the new church, Marylebone. "Lady Campbell (Agnes Hunter)," continues Clift, "remained in Holles Street, and, of course, did not appear." "Mrs. Hunter had been declining in health and strength gradually for some time. Dr. Baillie and Sir Everard Home thought it useless to drench her with Medicine; as she had little appetite they supported her with Cordials, such as weak brandy and water, &c. Being very fair, and her hair like Flax, her Teeth had failed her for several years; and consequently her digestion did not improve."

Of Clift's activities outside the College, such as the dissection of the bodies of criminals who had been hanged, his journeys in search of specimens, or the relations of the College with arctic and other explorers, some account may be given at a future date. VICTOR G. PLARR.

THE OPERATIVE TREATMENT OF MALIGNANT DISEASE.

BRADSHAW LECTURE BY MR. H. J. WARING.

At the Royal College of Surgeons of England, on December 14th, the Bradshaw Lecture was delivered by Mr. H. J. Waring, Fellow of the College, on "The operative treatment of malignant disease, its possibilities and limitations."

Mr. WARING said that he proposed to confine himself to the conclusions at which he had arrived as a result of his own work and observation during the last twenty-five years, and to bring forward no references to literature or to statistics. Statistics in this instance were misleading, because many patients, especially hospital cases, were reported as cured and passed out of the observation of the operating surgeon, but afterwards developed recurrence and sought treatment elsewhere.

Commencement and Site of Malignant Disease.

Pathologists had not yet succeeded in demonstrating the actual mode of commencement of a malignant tumour. Probably the process was essentially a local one, and only after the growth had become well established did it invade adjacent tissues or cause the formation of secondary growths. The growth having infiltrated into the various connective tissue layers, a few cells might be detached, and, carried by the blood or lymph streams, give rise to secondary growths in other parts of the body. The parts in the immediate neighbourhood of a new growth usually, in varying degrees, formed a natural barrier to its extension, and therefore, from the surgical point of view, in all malignant disease the affection should be regarded as really a local one, and upon the extent to which this was the case depended the possibilities of successful operation.

The first important consideration was the site of the disease. When malignant disease attacked a tissue or organ near the surface of the body the patients usually sought skilled advice at an early stage, and this permitted of surgical interference in a way that promised success. In cases in which the tongue was affected, for instance, people, at all events among the educated classes, came for advice early, although this did not hold good in the case of people of the artisan class, especially if they had no effective dental service available, and the results in consequence were less satisfactory. But in the case of affected tonsils, on the other hand, the disease often was not manifest to the patient until a much later period in its development; indeed, epithelioma of the tonsils might not be noticed until the adjacent vessels were well involved.

The determining importance of the site of the disease was illustrated in such cases as carcinoma of the oesophagus, which was very difficult to approach surgically, and, even if the anatomical difficulties were overcome, the patients almost invariably died from secondary haemorrhage. The stomach was frequently, in the later decades of life, the site of a carcinoma, and up to the present the surgical results had not been as satisfactory as one would wish. This was due to a great extent to the difficulty of early diagnosis. The tumour could not be readily felt, and the disease was often not treated until the lymph glands and other structures had become infected. The pancreas was another deep-seated organ, and the symptoms which followed from malignant disease of the pancreas were not very definite, so that by the time the disease was noted it was often too extensive to eradicate. He had operated for carcinoma of the pancreas in three cases, but two of the patients died after operation, and the third only recovered to die later from secondary growths.

Primary and Secondary Growths and Types of Carcinoma.

The extent and connexions of the primary disease had next to be considered. Some growths, while extending quite markedly, would remain with margins well differentiated from the surrounding tissues, and here the prospect of operative treatment was good; but others—he showed in illustration a growth in the pelvis of the kidney extending to the ureter—had no clear line of demarcation, and in such cases there was likely to be a swift recurrence after operation. Secondary growths were most commonly developed in the lymph glands. An

infiltrating growth of the tongue, even if it were recognized at an early stage, might set up a secondary growth which rendered further operative procedures of doubtful benefit. When the growth involved the lymph glands largely and the connective tissues showed signs of oedema, the case might be said to be beyond surgery. On the other hand, columnar-cell carcinoma of the large intestine and rectum might exist for a long time before it set up secondary growths, and such a condition was very amenable to surgery, provided it was diagnosed early. Considerable stress was sometimes laid on diagnosis by *x* ray examination of the intestinal tract. The lecturer thought that *x*-ray workers were rather inclined to make diagnoses which were not justified by clinical experience. He would not advise reliance on the *x*-ray findings to determine whether or not an operation should take place in columnar-cell carcinoma. The primary growths appeared to have, in some cases, a marked influence on the further increase in size of the secondary growths. The cause of this was not clear to him; he only knew that it was so as a result of clinical observation.

From the clinical point of view carcinoma might be said to consist of four varieties: (1) The exuberant, or "cauliflower," type; (2) the ulcerative type, which was fairly satisfactory in operation; (3) the infiltrating type, which surgically was the least satisfactory of all; and (4) the scirrhus type, with a large amount of fibroid tissue, met with particularly in the breast, and giving fairly satisfactory results in treatment. Occasionally a tumour which had existed for a long time and had been regarded as non-malignant would become malignant; it was always well for the surgeon to bear in mind that possibility. The more the cells of a malignant growth approximated to the type and size and characteristics of the cells of the tissue from which it had been taken, the greater was the likelihood of the success of the operative procedure. The more remote histologically, the smaller the prospects of success. Usually the vital characteristics of the cells of a malignant tumour could not be estimated until the growth had been removed and a histological examination made. But the vascularity of the growth and its mode of extension was of assistance in prognosis. A very vascular tumour with cells extending widely from the margins indicated the less favourable condition.

The reaction of the tissues immediately adjacent to the malignant growth was an important factor. Generally the tissues were resistant, and sometimes formed a fibrous barrier, so that the growth was localized, its extension limited, and its invasion of the lymph and blood vessels delayed, but, on the other hand, the tissues appeared sometimes to offer no barrier, and then the case was exceedingly grave.

Characteristics of Patient and Decision as to Operation.

The vital characteristics of the patient and the coexistence of other diseases had also to be reckoned with. Patients who were naturally obese were not usually good subjects for operation, owing to the ease with which a malignant tumour invaded fatty tissues, and also in certain cases to their diminished power of repair. The patient's age was of some importance. Carcinoma in the elderly was of slower growth than in the young. In carcinoma of the breast in a woman of 30, or of the tongue in a man of 30, the operation was likely to be less successful, other things being equal, than in a similar case with a man or woman 20 years older. Some surgeons were averse from removing malignant growths in people of advanced age, but age was not a barrier to the performance of an operation unless the patients had other affections which militated against success.

Preliminary excision of a portion of the supposed malignant growth before operation, in order to confirm the clinical diagnosis and decide the kind and extent of operation to be performed, was a practice which could not be too strongly condemned, as the necessary cutting might cause the starting of new growths. Careful clinical examination by a skilled diagnostician would, in practically all cases, avoid the necessity for such a procedure. Where some such course was demanded, the growth should be removed as far as seemed practicable, and, after investigation, the operation completed in the appropriate way. All the clinical facts should be communicated to the pathologist. Clinical examinations of supposed malignant tumours should be carefully carried out, and when the diagnosis was once made further repeated examinations should be deprecated because they were likely to lead to the detachment of cells from the tumour and establish secondary growths. Every operation for radical cure should have for its objective the complete removal of the primary focus of the disease. Unfortunately, operations were sometimes done by surgeons whose anatomical knowledge was not as complete as it should be. The results of surgical procedure would be more favourable with the earlier diagnosis of the disease and immediate operative treatment by a skilled surgeon versed in the anatomy of the part.

X Rays and Radium.

The lecturer referred, in conclusion, to the value of *x* rays and radium in complementing or replacing surgical procedures. *X* ray applications previous to the performance of an operation had been advocated by many. In his own experience he had not been able to assure himself that there were any advantages from this preoperative treatment. One of its effects was to cause the tissues in the region of the growth to become indurated. In the case of carcinoma of the breast and other superficial tumours it might be an advantage to apply *x* rays after operation in order to destroy any scattered or detached cells outside the operative field. It was essential to the successful treatment of malignant disease that all malignant cells should either be removed by operation or destroyed *in situ*, and agents such as *x* rays and radium offered the only means of attaining the second result. There was no doubt that *x* rays and radium exerted a marked effect on the growth of cells in many malignant tumours. A previous injection of a salt of copper was said to assist in the destruction of the tumour cells by *x* rays, and physicists with whom he had discussed the matter thought that the introduction of copper was likely to cause the cells to be more subject to *x* ray action.

The empirical application of *x* rays and radium in the treatment of all cases of malignant disease was strongly to be deprecated. Recently an improved *x*-ray apparatus had been introduced, and with this it was claimed that the rays could be effectively applied to deep-seated tissues. The powers of this therapy had been very much exaggerated in the lay press. His own belief was that the frequent result of *x*-ray treatment of operable growths was to render them inoperable. One of the chief reasons for failure in cases treated by *x* rays was that the radiologists who had treated the patients had had insufficient clinical experience. A few weeks previously he had been visiting Germany, and he went to one of the centres where deep *x*-ray therapy was practised. There he found all kinds of patients being treated by *x* rays, and it appeared to him that while the *x*-ray operators were highly competent in their own technique they were less familiar than they should be with clinical medicine. He asked one of the authorities to show him a cured case, and a patient who had been treated for carcinoma of the breast was brought for his inspection. Undoubtedly the breast carcinoma had shrivelled up a great deal, but the growth had spread into the axillary region, where he found a considerable secondary growth adherent to the lymphatic structures. He indicated this to the *x*-ray specialist, who, however, said that there was nothing in it of importance! Mr. Waring insisted that in cases in which *x* ray treatment was given the *x*-ray operator and the clinician should work in close conjunction. In his opinion, up to the present time many more cases had been rendered inoperable, and therefore incurable, by *x* rays and radium than had been cured by these agents. The place of *x* rays and radium was in surgically inoperable cases, where much alleviation of suffering and some prolongation of days might be obtained from radiotherapy.

THE next annual meeting of French-speaking neurologists will be held at Quimper in the first week of August, 1922, under the presidency of Professor Jean Lépine, of Lyons, when the following subjects will be discussed: (1) Mental disturbances in epidemic encephalitis, introduced by Drs. Truelle and Petit; (2) Lesions of the central nervous system in motor restlessness and muscular rigidity, introduced by Dr. Anglade, of Bordeaux; (3) Care of the insane and protection of the rights of the individual and society, introduced by Dr. Courbon, of Stéphansfeld.

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CHEMICAL WARFARE.

THE policy of secrecy concerning gas warfare in all its aspects resulted in a veil being drawn across the stage of war, and only now, little by little, is this veil being pulled aside. Even when all the official histories are printed it is not likely that the whole story will be told, but we shall know enough to study the great medical problems involved, just as the daily press is initiating the general public into some of the new and terrifying possibilities that chemical warfare holds. Secrecy was a wise precaution when our defence against gas was inadequate, and a necessity as regards our own and our Allies' preparations for using the same weapon. That it, however, hampered medical treatment of the casualties and led to an unnecessary prolongation of convalescence, particularly in home hospitals, is equally undoubted.

Most of the recent publications on the subject, dealing both with medical and general aspects, have come from American authors, which is not surprising when the great gas organization built up in the United States is remembered. Nearly 1,300 chemists were allotted to various branches of research work, and we have it on the authority of General Fries, who commanded the American Gas Service in France, that at the armistice their Chemical Warfare Service, including the gas regiments, numbered over 4,000 officers and nearly 45,000 men. The results of some of the medical research are now available,[1] and form a valuable record of pathological and therapeutic investigation. The final results very largely confirm the opinions which had been held by British observers, who, working without the advantage of much laboratory assistance, and pressed as they were by the urgent needs of the moment, may well be satisfied that in no essential have their conclusions been proved at fault.

It will be remembered that the first employment of poison gas was by means of cloud attacks: chlorine, and later a mixture of chlorine and bromine, was liberated from cylinders and carried down wind to the opposing lines. This method of attack was gradually replaced by gas shell, whereby a variety of poisons could be used, the direction of the wind could largely be ignored, and a very high concentration of gas could be obtained on a distant target. Phosgene and other toxic substances with a similar action—notably chloropicrin—were at first the usual filling for gas shells; but the introduction of "mustard gas" in July, 1917, marked the point when chemical warfare began to be a definite factor as regards the number of casualties. Up to that time gas warfare, though harassing to troops from the need for constant vigilance, caused a proportionately small number of casualties; but after mustard gas was freely used casualties increased enormously in numbers, and began to influence the problem of man power very considerably.

[1] *The Lethal War Gases: Physiology and Experimental Treatment.* By Frank Underhill, late Lieut.-Colonel, Chemical Warfare Service, United States Army. New Haven: Yale University Press. London: H. Milford, Oxford University Press. 1920. (Med. 4to, pp. 309. 63s. net.) *The Medical Aspects of Mustard Gas Poisoning.* By A. S. Warthin, Ph.D., M.D., and C. V. Weller, M.S., M.D. Henry Kimpton. (Pp. 267, with 156 original illustrations. 42s. net.)

The classification of gases adopted during the war was in accordance with the main pathological condition produced, and this may still be regarded as the most useful for general purposes. The lethal gases or lung irritants, such as chlorine and phosgene, produced their main effects on the pulmonary alveoli. The second group was named the vesicants, of which mustard gas was the outstanding member. The third, consisting of the arsine preparations, was employed in the closing phase of the war, and was the least effective weapon in the production of serious casualties, though the effects were immediate and for a short time stupefying. About this last group little has so far been published in accessible literature, largely because its potentialities are so considerable.

Mustard gas produces a chemical burn, affecting any portion of the body with which either the vapour or the fluid itself comes into contact. The effects are delayed; usually they commence six or eight hours after exposure. Then an acute inflammatory process begins, and this, if not checked, is followed by a bacterial invasion, the organisms common to the area affected multiplying on the pabulum of dead tissues provided, and setting up their characteristic lesions. The eyes, the skin, and the airway are all accessible to the direct action of this poison, and consequently suffer. Acute conjunctivitis, leading on to keratitis if neglected: a widespread erythema, followed by vesiculation, stripping of the epidermis, and extensive septic burns: laryngitis, tracheitis and bronchitis, with sloughing of the mucous lining of the larger tubes and complicated by a descending septic bronchopneumonia: these are the grave lesions observed. The American authors confirm the view held by the British, in opposition to the French, that mustard gas does not produce any systemic affection. The symptoms of the latter they, with ourselves, ascribe to the secondary septic infection, which may set up acute nephritis or toxic myocarditis.

In discussing the treatment of skin lesions the authors lay stress on the value of hypochlorous solutions, and the standard treatment in the American armies was based on their recommendations. It consisted of alternate treatment with eusol solution and hypertonic saline solution, to the entire exclusion of ointments. The protocols of cases treated in this fashion form a strong argument in its favour. Though masks can save from respiratory or ocular troubles, the skin is in no way protected, and as mustard gas—a fluid with a high boiling point—can remain active on the ground for days, troops moving over a contaminated area will be exposed to the danger of burns for days after the shelling. We may note here the varying degree of susceptibility to the action of mustard gas: some individuals show a burn after an exposure of five seconds to air saturated with vapour, others show none after an exposure of five minutes, while among negroes 70 per cent. are resistant to a 1 per cent. solution.

Colonel Underhill has given us a monumental work on the action of the lung irritants, which affect the pulmonary alveoli, setting up acute oedema. His book is a mass of detailed experiments, largely undertaken to investigate the blood changes. In brief, it may be stated that the blood is an index to the severity of the pulmonary condition. The initial phase is one of blood dilution, which lasts for about six or eight hours. This he regards as an increase of blood volume due to the reaction of the tissues in response to the strong irritative stimulus of the gas on the respiratory tract. This phase, during which

pulmonary oedema develops, is followed by a very high blood concentration, persisting for several hours. The concentration is due to the pouring out of fluid into the lungs. This, in part a passive effect, is in a large degree due to mobilization of chlorides in the lungs, which leads to retention of fluid to hold them in solution. The tissues first are drained of fluid to supply this need, but ultimately the blood also becomes concentrated to furnish the demand of the lungs. If recovery takes place, a slow return to normal concentration follows. Associated with the oedema there is a marked degree of acidosis, but whether this is due to chlorine absorption or to a CO_2 acidosis has not been determined. Thus, physiological problems of great interest are outlined in this work.

With regard to treatment, the author advances some views which will not be fully accepted in this country. He advocates venesection, and urges its employment at an early stage before acute pulmonary symptoms have supervened. This may be possible in a laboratory, where the degree of gassing is known, but it is impracticable in the field. Were it carried out it would be an enormous tax on the medical service, and would certainly mean that a large number of men would be unnecessarily deprived of a pint of blood. We agree with the value of venesection in treatment but doubt its place as a prophylactic. Associated with bleeding he advocates intravenous saline infusion (0.97 per cent. NaCl). This treatment has not been tried clinically; but in theory it is sound, and has proved of value in the laboratory. On the question of oxygen we again part company with him. His work on gassed dogs led him to attach little value to oxygen, but the British medical service in France proved its value and saved scores of lives by its use.

Major Lefebure, in his interesting book *The Riddle of the Rhine*,[2] shows how the successive developments in the use of poison gases took place, and he concludes that in future wars these gases will play an even more important part. His object is to point out the fact that now that the war is over Germany is left with eight enormous chemical factories, seven of them on the Rhine, all of which can at short notice be converted into poison gas factories capable of turning out three thousand tons of poison gas a month. No other country is in a position to produce a tithe of this amount. Major Lefebure holds that Germany's possession of factories capable of making such enormous quantities of poison gas constitutes a menace to humanity, and discusses the methods by which the menace may be countered. The ideal method without doubt would be to abolish gas warfare, as was suggested in the manifesto published in the BRITISH MEDICAL JOURNAL of November 30th, 1918, p. 611. Failing this, however—and it seems clear that no convention, guarantee, or disarmament safeguard will prevent an unscrupulous enemy from employing poison gas if he has the whip-hand in its production—other methods must be looked for.

A great field of research has been opened up by chemical warfare. To some extent this research is of benefit to general medicine. In the main, however, we cannot but regard it as a degradation of medical science that it should be called upon to assist in the study and perfection of lethal agencies. It is a strange anomaly that whilst the International Disarmament Conference is discussing control of preparations for war there should be an apparent quickening of interest in chemical means of destruction.

[2] *The Riddle of the Rhine: Chemical Strategy in Peace and War.* By V. Lefebure. With an introduction by Field-Marshal Sir Henry Wilson. London: W. Collins, Sons and Co., Ltd. 1921. (Demy 8vo. pp. 277; 1 illustration. 10s. 6d. net.)

THE SIGNIFICANCE OF DIGESTION OF THE OESOPHAGUS.

DIGESTION of the mucous membrane and walls of the oesophagus is a recognized condition at necropsies; it has largely been regarded as an event taking place after death, and although the occasional occurrence of peptic ulcers at the lower end of the oesophagus, analogous in all respects to gastric and duodenal ulcers, has long been known, the first attempt to correlate post-operative and other forms of haematemesis with *intra-vitam* digestion of the oesophagus was made by Mr. Pringle and Professor Teacher in 1919 on the basis of clinical observations and naked-eye examination of the oesophagus. *Intra-vitam* digestion of the oesophagus (oesophago-malacia) is probably not so very rare, and some at any rate of the cases commonly regarded as examples of *post-mortem* digestion really belong to the category of actual and important disease.

Professor Teacher, Mr. Pringle, and Dr. L. T. Stewart,[1] have observed eighteen examples in seven years and have now supplemented the previous paper by histological examinations of fifteen specimens showing evidence of vital reaction in all but one; in the exceptional instance haematemesis had occurred during life. When the change occurs after death the stomach is commonly affected also, vital reaction such as acute inflammation is absent, and rupture into the pleura is rare; in *intra-vitam* digestion of the oesophagus on the other hand the stomach is either not at all affected, or only slightly, and the microscopic appearances are in general those of acute injury and inflammation. The cases may be classified into three groups: in the first there is slight superficial erosion with a history of vomiting of black material; in the second there is severe and extensive ulceration without perforation, and microscopic examination shows much more change than appears to the naked eye; in these cases it was thought that the lesion had occurred within a period of thirty-six hours of death; in the third group, which contained nine cases, perforation or widespread destruction of the lower part of the oesophagus had occurred. The main clinical manifestation was vomiting of blood, unusually black, in small quantities; pain behind the sternum or between the shoulders was noted in two cases, but is probably a characteristic symptom, being, no doubt, often masked by pain due to the principal disease or by the patient's grave condition. Out of the eighteen patients, ten were suffering from surgical conditions, such as appendicitis or gall stones; in two the condition occurred subsequent to accidents—namely, rupture of the liver and fracture of the femur; and six were observed in such medical conditions as pneumonia and puerperal eclampsia. The suggested explanation is that vomiting of active gastric juice occurs, and that some of this fluid remains in the lower part of the oesophagus and digests its walls; in nine cases in which fairly accurate time data were available the interval between the onset of haematemesis and death was from twenty to thirty-eight hours; in one case the interval was forty-three hours, and the microscopic appearances were compatible with commencing healing.

The process of *intra-vitam* digestion of the oesophagus, therefore, is not an agonal phenomenon, and, as it can be diagnosed, it may prove to be amenable to treatment.

[1] J. H. Teacher, J. H. Pringle, and L. T. Stewart, *Journ. Path. and Bacteriol.*, Edinburgh and London, 1921, xxiv, 396-412.

BREAST CARCINOMA.

FOR some years past Sir Lenthal Cheatle has been conducting careful researches on the histology of breast carcinoma. His work is all the more welcome because at the present day the professional pathologist is almost entirely engrossed with problems of bacteriology and serology. It is our loss that the rush to these gold mines should have been so universal and whole-hearted, for it has left the man who stayed at home, the morbid anatomist, to follow an unfashionable pursuit and to be, in some quarters, the object of good-natured reproach. Sir Lenthal Cheatle proves to us that the study of dead tissue is not so barren a field as many would have us believe. We have achieved no finality of knowledge here, and Sir Lenthal Cheatle has been able to show to us that the patient study of sections will reveal to the investigator many facts which others have misinterpreted or neglected. The method employed has been the intensive study of serial sections of large pieces of breast tissue, and the object has been the investigations of cysts of the breast, of cystic mastitis, and the origins of cancer. By his serial sections he has demonstrated that many of the so-called breast cysts are really in continuity, that they are not properly cysts, but dilated and convoluted ducts. In a paper published recently[1] he discussed those intracystic papillomata, which he terms "uni-" and "multi-radicular," pointing out the relationship of the latter to carcinoma. He goes on to describe a condition of diffuse, benign, desquamating hyperplasia of epithelium in ducts and acini. This condition he regards as primary within the gland and not secondary to chronic inflammatory changes outside the epithelial tube. This change he believes to be due to an irritant, probably gaining access along the ducts from without. Thus stagnation with irritation are the causal factors, and the end result may be a benign desquamative hyperplasia (so-called "chronic mastitis") or something more serious. This former condition is the first step in the dilatation of the ducts which leads to the apparent cyst formation. Papillomata and malignant disease may follow. It is impossible fully to appreciate this very short but suggestive article without reference to two previous papers.[2] It will be recalled that Sir Lenthal Cheatle many years ago put forward the suggestion that cancer begins most commonly in the ducts and more rarely in the acini. Its origin becomes obscured when lymphatic permeation and infiltration take place owing to cell metaplasia converting the original columnar cells into cuboidal and spheroidal shapes. In an advanced case the origins of the growth become obscured, and little, if any, trace of the original cell type can be found. It is at this point that the whole breast sections can be of great value, and the study of the area neighbouring on the chief mass of growth may bring fruitful results. One other benefit derived from such sections has already been alluded to—namely, the demonstration of the unity of scattered "cysts," which are really only sections of a convoluted duct system. A further point of great importance is the apparently wide area of primary malignant growth. The carcinoma does not begin at one very definite spot in the duct wall and spread by indiscriminate invasion, but seems to spring from wide areas of duct wall. To explain this on our present conceptions of cancer growth it is necessary for Sir Lenthal Cheatle to postulate a definitely "genetic action" on the part of the tissue fluids secreted by the cancer cells. He suggests that autolytic products of injured cells may cause this proliferation. This is, however, merely a tentative suggestion to explain an observed condition very difficult to reconcile with the facts of cancer as we know them to-day. There can be little doubt, however, as to the accuracy of Sir Lenthal Cheatle's observations, and his really beautiful and profuse illustrations bear out the written word.

[1] "A Further Contribution to the Study of Cysts and Papillomata of the Breast," by Sir Lenthal Cheatle, *Brit. Journ. Surg.*, 1921, October, 235.

[2] Cysts, and Primary Cancer in Cysts of the Breast, Sir Lenthal Cheatle, *Brit. Journ. Surg.*, October, 1920, 149. Benign and Malignant Changes in Duct Epithelium of the Breast, Ibid., January, 1921, 385.

THE ETIOLOGY OF ERYTHEMA NODOSUM.

THE contribution to the elucidation of the etiology of erythema nodosum by Dr. J. Odery Symes in our issue of November 5th and the various communications to which it had given origin make it clear that this curious condition still requires much research before its relationship to other diseases can be regarded as definitely established. One of the most interesting contributions to this subject was recently made by the well-known Swedish physician Dr. H. Ernberg, but it has not enjoyed the wide publicity it deserves. In August, 1919, at the first Northern Congress for Pediatrics in Copenhagen, he gave an account of 55 cases, all of which had been under close clinical observation throughout the period of the eruption. As Dr. Ernberg pointed out, accounts of erythema nodosum are seldom combined with a careful record of the condition of the lungs. Focussing attention on the lungs, he found that during the eruption, particularly in its late stages, transient signs of pulmonary disease were often demonstrable. From time to time he detected rhonchi, changes in the quality of the normal respiratory sounds, prolonged expiration over part or nearly the whole of one lung, slight dullness over a considerable part of one lung, and other signs of involvement of the lungs. He suggested that the briefness and inconstancy of these manifestations probably account for the slight attention hitherto paid them. His case for regarding erythema nodosum as a tuberculous reaction received considerable support from *x*-ray examinations of the chest which were undertaken in 39 of his 55 cases. In 35 of these 39 cases there were *x*-ray signs of tuberculosis, and there was considerable evidence for regarding it in most of these cases as both active and extensive. Only in four cases were the *x*-ray signs of tuberculosis uncertain; but, curiously enough, in these four cases other signs of tuberculous infection, such as phlyctenular conjunctivitis, filled the gap in the evidence. Dr. Ernberg's researches into the relation of v. Pirquet's tuberculin test to erythema nodosum also seem to have cleared up some of the mysteries surrounding it. His study of the literature of negative tuberculin reactions in connexion with erythema nodosum showed that, when the time of the test was stated, it was always carried out during convalescence and after the erythematous stage. In his own experience the test invariably proved definitely positive when he carried it out during the acute stage of the erythema, and after the erythema had subsided this test was apt to be negative even when there were definite clinical signs of tuberculosis. Many of his patients developed manifest tuberculosis soon after the outbreak of the erythema, and he concluded that this condition should be regarded as the organism's reaction to "autogenous tuberculinization," the lesion being closely similar to that provoked locally by a subcutaneous injection of tuberculin. The collection of abstracts in *Tubercle* for May, 1920, and October, 1921, shows how busy many investigators have lately been in scrutinizing the underlying cause or causes of erythema nodosum.

THE TREATMENT OF LEPROSY.

IN the account given on November 19th (p. 851) of the position to-day of the treatment of leprosy reference was made to the progress achieved in the past twenty years by the use of chaulmoogra oil and its derivatives, and more particularly during the last ten years by improvements in technique. A considerable amount of valuable and interesting clinical work on the subject is being done in the Far East, as, for example, at Makogai, Fiji, by Dr. Philip Harper, and at Siaokan, China, by Dr. Henry Fowler, of the Mission to Lepers. The annual report for 1920 of the

Fiji Medical Department, published recently, contains an appendix by Dr. Harper on the treatment of leprosy by the intravenous injection of chaulmoogra oil. Fijians, he states, are quick to recognize leprosy, which has existed amongst them from early times, and have special names for all the prominent symptoms. Dr. Harper considers that the division of cases into nodular and nerve is unsound, because although cases of pure nerve leprosy are common, in a case of nodular leprosy careful examination will always demonstrate nerve symptoms. In his experience the first sensation affected in leprous neuritis is that of temperature, pain sensation next disappears, and touch sensation later. There are three stages, he concludes, into which leprosy, in Fiji at least, may be roughly divided: (1) the macular stage, without neuritis or nodules; (2) the nerve stage, with macules, past or present, but without nodules; and (3) the nodular stage, in which neuritis is always demonstrable though macules may not have been noticed. Acid-fast bacilli teem in smears of serum from macules, accompanied by infiltrations on nodules, but are not found in smears from macules present alone. Dr. Harper considers that all cases of purely skin leprosy and some cases of the nodular type can be cured; he insists, therefore, on the importance of early diagnosis and treatment. The favourable results of treatment in the past few years at Makogai have been due to the general hygienic treatment and to the intramuscular injection of chaulmoogra oil, mostly by Mercado's formula; it has been found, however, that chaulmoogra oil may be given intravenously. Of forty cases so treated since August 21st, 1920, all derived benefit except two, in both of whom treatment had to be stopped early. The formulae employed for intravenous injection are two, though the iodine formula has recently been abandoned, as it was convenient to use only one mixture when as many as 200 patients were being injected daily. The first was: Iodine 1 part, ether 250 parts, chaulmoogra oil 750 parts. The second is: Carbolic acid 10 parts, ether 250 parts, chaulmoogra oil 750 parts. Chaulmoogra oil had previously been given intravenously with great precautions by Varham, Stevenel, and Noc, but the dose used was about one-fortieth of that employed by Dr. Harper, and it was repeated far less frequently. He starts with 10 minims of one of the above mixtures for adults, and this is increased gradually to 20 minims without ill effects; the dose is given daily for six days a week, and may be continued for at least five months on end. Children bear relatively large doses; one advanced case, an Indian girl aged about 9 years, received 20 minims for several weeks. The immediate effects of the injection are a taste of ether and of chaulmoogra oil, flushing of the face, acceleration of the respiration and pulse, and sometimes cough; the later results include slight drowsiness, a rise of temperature and of pulse rate, reaching the maximum in about four hours and ending eight hours after injection, and leucocytosis. If in making the injection the vein is missed and the injection made into the cellular tissues, a painful swelling persists for two or three days, and sometimes longer; in the first 3,000 injections there were two cases of mild and transient phlebitis. In *Without the Camp* (the quarterly magazine of the Mission to Lepers) for October, 1921, Dr. Henry Fowler states that intramuscular injections of chaulmoogra oil and camphorated oil, with resorcin, given week by week, had little success in his hands in the treatment of leprosy. Later on he ascertained that in Korea, where excellent results were being obtained at the same time by Dr. Wilson, of Kwangju, larger doses were used. The camphor was dissolved in the chaulmoogra oil itself, and ultimately the resorcin was omitted. One pound of chaulmoogra oil is brought to the boil in a water bath, and 100 grains of pulverized camphor added; the mixture is kept in the water bath with the cork of the bottle partially closing its mouth until all the camphor is dissolved; the bottle is then tightly corked, and the contents are ready for use. The oil is injected into the deep gluteal muscles, starting with 2 c.cm. once a week for the first month, then 3 c.cm. once a week for the second month, increasing by 1 c.cm. each month until 6 c.cm. are given once a week in the fifth month; if the patient can stand it, this dose is continued. Under such treatment, in three or four months patients say that they feel stronger and more cheerful, sensation returns to previously anaesthetic areas, and the thickened nodular appearance is no longer to be observed.

SYMPTOMLESS CARRIERS OF PROTOZOA.

In a recent paper Dr. H. H. Scott has drawn attention to the frequency of carriers of the cysts of *Entamoeba histolytica* and *Entamoeba coli* in Jamaica.[1] None of the 102 individuals chosen for examination were suffering from intestinal complaints, but they were selected at random from patients admitted to hospital for other diseases. Nine examinations, at intervals of two or three days, were made on each individual over a period of three weeks, the stools being concentrated by the method of Cropper and Row. Three separate samples from each stool were examined before the stool was passed as negative for the day. Dr. Scott found that cysts of *E. coli* were found at some time or other in 47 per cent. of the patients examined, and *E. histolytica* in 17 per cent. These figures are very high. The nearest approach to the figure for *coli* cysts was that noted by Matthews and Malins Smith among asylum patients in England—namely, 45.9 per cent. Though these carriers themselves were not suffering from the disease, those harbouring *histolytica* cysts were, of course, potential sources of infection to their neighbours. The sanitary provisions of Jamaica are, to say the least, primitive, and therefore natives must be constantly exposed to infection. Dr. Scott reports that in two of the males and one of the females examined there were ankylostoma, ascaris, trichiuris, *E. coli* cysts, *histolytica* cysts, Giardia, and Chilomastic without causing any abdominal or intestinal disturbance. In a second paper Dr. Scott deals with the sizes of *E. histolytica* cysts among symptomless carriers in Jamaica. The cysts varied in size from 7 to 15 μ, but the average diameter lay between 11 and 12 μ. The curve obtained by plotting the size of the cysts against the number examined was found to be bimodal, the first mode appearing between 7.5 and 8 μ and the second between 12 and 13 μ. A case is reported giving instances of the change of size of *E. histolytica* cysts in the same patient, a fact which previous workers have not observed and one which has a practical bearing on the question of the differentiation of strains by the size of the cysts. With regard to the size of *E. coli* cysts, Dr. Scott shows in a third paper that the curves recording the size of *coli* cysts is also bimodal, with modes between 17 and 18 μ, and again between 19 and 20 μ. It is usually stated that the curve of *E. coli* is unimodal, with the mode between 16 and 17 μ. It would appear, therefore, that the cysts of the races of *E. coli* found in Jamaica are of a larger average diameter than those found elsewhere.

MEDICINE AND LAW.

The annual dinner of the Medico-Legal Society was held on December 14th, when Lord Justice Atkin presided, and the Lord Chief Justice, the Attorney-General, and the Presidents of the Medical Society of London and of the Law Society were the principal guests. Sir William Collins, in proposing "Medicine and Law," raised the delicate question as to which should have precedence. The two professions had developed side by side, and the first hint of their association was to be found in the code of Menes, when the law called medicine to its aid to secure that no corporal punishment should be administered to a woman with child. The methods of procedure of the two professions were fundamentally different. Medicine had

[1] *Annals of Tropical Medicine and Parasitology*, vol. xv., July, 1921.

few of the uniformities in which law delighted, but was rich in hypotheses. The medical man rather distrusted the legal method, and was apt to hold with John Hunter that "Definitions are of all things most damnable," while the lawyer probably summed up the medical man as he left the witness-box, as Hume summed up the philosophy of Berkeley, "His case is unanswerable, but it fails to carry conviction." Sir William Collins hinted at the formation of an institute or faculty of forensic medicine under the aegis of the University of London. Mr. James Berry responded to the toast as President of the Medical Society of London, and in making play with the antithesis of the two professions told the story of the lawyer who remarked to a doctor, "In our professions we both of us have to do dirty work," and received the reply, "Yes; but, at any rate, after my dirty work I can always wash my hands." The Attorney-General, who spoke next, said that the lawyer could have replied that for his part he always came into court with clean hands, and that if he knew anything about his business he took care not to soil them. Sir Gordon Hewart added that to make a comparison between Law and Medicine was a little invidious, and he would find refuge in the example of the schoolboy who, when asked to say which was the greater general, Hannibal or Julius Caesar, replied that when it came to a comparison of their abilities and achievements the answer must be in the affirmative! The Lord Chief Justice, in a few words, proposed the toast of "The Medico-Legal Society," and said that anything which associated the medical profession with law was of great advantage, at all events to the law: the two were not in such antagonism as was sometimes suggested. Lord Justice Atkin contented himself with a survey of the work of the Medico-Legal Society, which, he said, was never in a more flourishing condition than now, and never had a larger roll of membership. Sir John Collie proposed "The Guests," and replies were made by the President of the Law Society and the Master of the Apothecaries' Company. The officers of the society were the recipients of many neat compliments from Mr. Travers Humphreys, who proposed their health.

SCHOOL HYGIENE FIFTY YEARS AGO.

THE recollections of a veteran in any service are always of interest, and the paper on school hygiene fifty years ago, by Dr. Clement Dukes, the doyen of the public school medical officers, which appears under the above title in the official organ of the Medical Officers of Schools Association,[1] will carry the reader back to his boyhood, and the recollection of what public school "sanitation" was like. As Dr. Dukes says, sanitary science in 1871 was in its infancy throughout the world, and in schools almost an unknown quantity; even where its existence was recognized it was largely disregarded in practice. But when the time arrived for him to relinquish the seals of office, he was able to inform the governing body of Rugby School that every single reform for which he had striven connected with the school had been attained, with the sole exception of sick-beds commensurate in number with the increased numbers in the school, and these were there and then conceded. In his view, "the secret of progress is definitely to ascertain what is absolutely required, and then go for it for all one is worth. Convince oneself, and convert those concerned; but the difficulties are that it usually involves so much and so many." He adds that he believes there will now be found in the public and preparatory schools, at all events in the English-speaking races, the soundest sanitary conditions which can at present be attained. In considering education arrangements, he discusses, the hours of work, and insists that for the very young they should be few, and the hours of sleep ample. He gives the following scale of the daily amount of sleep necessary at various ages: At birth twenty-three hours, at 1 year twenty, at 2 years eighteen, at 3 years sixteen, decreasing thereafter by one hour a year until the age of 6, and after that by half an hour a year until at 19 the hours of sleep number nine. At all other ages he considers eight hours a night enough. He considers that there is still a fault in the deficiency of supply of fat in the general dietary scales: "Few children will eat the fat of butchers' meat, but they love suet puddings of all kinds." Parents, he urges, should get into touch with the schools, as much good may be gained thereby. Comparing the advantages and disadvantages of day schools and boarding schools, he concludes that the boarding school is the best place for those children who have the misfortune to be reared in homes where the discipline is slack. "And the meaning of discipline," he says, "is training, not punishment!" Dr. Dukes objects to the easy-going policy in vogue, which says, "He will turn out all right in the end." And adds that "He will—if he is made to!" He concludes his interesting paper with a note of admiration for the work of Sir Robert Baden-Powell, Chief Scout-Master and founder of the Boy Scouts and Girl Guides.

[1] *School Hygiene*, November, 1921.

SMOKE ABATEMENT.

THE injurious effect of a smoke-laden atmosphere both upon health and property has long been admitted. Dr. W. A. Brend in a recent paper[1] has expressed the view that a smoky and dusty atmosphere far transcends all other influences as a cause of infant mortality, and other observers have shown that there is a distinct relation between smoke polluted air and ill health. A parliamentary committee reported in 1919 on the practicability of smoke prevention. In the past hundred years many special inquiries into the subject have been held, and there has been a great deal of legislation relating to it. A bill introduced in the House of Lords in 1914 by Lord Newton was withdrawn on second reading upon the promise of the Government that a Departmental Committee should be appointed to examine the present state of the law and its administration and to advise as to further legislation. The President of the Local Government Board, Sir (then Mr.) Herbert Samuel, appointed a committee, but its labours were abandoned during the war, and it was reconstituted by Dr. Addison in January, 1920, with Lord Newton as chairman. An interim report was issued six months later and the final report of the committee has just been published. It is clearly shown in these reports that the existing laws with respect to smoke nuisances are not being administered as they should be. The reason for this is not far to seek, for the administration is in the hands of the local sanitary authorities, whose members include many delinquent manufacturers. There is also a widespread delusion "that the presence of smoke implies prosperity and that the blacker and grimier a district the more flourishing are its circumstances." The Alkali Acts are administered by Government inspectors, and it is evidently the opinion of the committee that the smoke abatement laws should be similarly administered, though no such definite recommendation is made, and the less drastic proposal is put forward that the central authority should be empowered to act only in default of the local authority neglecting the duty placed upon it of enforcing the law. Other recommendations are that, while minor local authorities should retain the power to take proceedings, the duty of administering the law with regard to the pollution of air by smoke should be in the hands exclusively of the county borough councils and the county councils. As regards domestic smoke it is recommended that the central housing authority, unless such a course is found to be impracticable, should decline to sanction any housing scheme unless specific provision is

[1] *Health and the State*, p. 87.

made for the adoption of smokeless methods for supplying the required heat. It is suggested that local authorities should be able to make by-laws requiring the provision of smokeless heating arrangements in newly erected hotels, clubs, offices, and similar buildings, and that the Government should encourage the co-ordination and extension of research into the problems of domestic heating generally. It is well known that in some towns a very considerable profit is made by municipalities in connexion with gas and electricity undertakings. This is deprecated by the committee, who recommend that every facility and encouragement should be given to increase and cheapen the supply of gas and electricity.

JEJUNO-COLIC FISTULAS AFTER GASTRO-ENTEROSTOMY.

GASTRO-ENTEROSTOMY, by altering the physiological conditions in the alimentary canal, created an entirely new morbid lesion—the peptic jejunal ulcer—which seems to have been first described by Braun in 1899; it has been variously estimated as occurring in 1 to 4 per cent. of all gastro-enterostomies. This sequence of events has naturally been carefully studied by surgeons, among others Mr. H. J. Paterson (89 cases in 1920) and Mr. Garnett Wright (165 cases in 1918), and was graphically described by the title of Sir John Bland-Sutton's Hunterian lecture in 1916, "Ulcers new and old, jejunal for duodenal ulcer." The jejunal ulcer may open into the colon, and a year and a half ago Dr. Charles Bolton and Mr. Wilfred Trotter published in our columns clinical observations based on 4 cases under their observation and 27 collected from literature (vide BRITISH MEDICAL JOURNAL, 1920, i, 757). This subject has recently been further elaborated by Dr. Georges Loewy,[1] of the surgical clinic of the Salpêtrière; by means of extensive research into the literature he has collected 59 cases, and by the addition of 17 previously unpublished examples, has brought the number of jejuno-colic fistulas after gastro-enterostomy up to 76; as the recorded examples of a peptic jejunal ulcer amount to about 400, the incidence of a jejuno-colic fistula is estimated at 19 per cent. The peptic jejunal ulcer is recognized to be much commoner in males than in females, probably because men are less amenable to dietetic restrictions; in some of the statistics three-quarters of the patients are males; but even so, it is rather remarkable that all Loewy's 76 jejuno-colic fistulas were in males. In all the gastro-enterostomy was retro-colic. This fistula is generally between the efferent loop of the jejunum, close and opposite to the gastro-enterostomy orifice and the transverse colon, which is often narrowed at this point. The efferent loop of the jejunum shows dilatation, congestion, and thickening, due to regurgitation of faeces and gas from the colon, in a fashion analogous to the dilatation of the ileum usually present after ileo-sigmoidostomy. Loewy discusses the pathogeny of peptic jejunal ulcer at some length under the three headings of (*a*) errors in surgical technique and post-operative feeding, (*b*) physiological factors, hyperacidity, and the peptic effect of the gastric juice, and (*c*) pathogenic factors, such as circulatory and nervous disturbance and infection, syphilis having recently been thought to be a probable factor, particularly in young subjects; but, although this monograph is rather remarkable for the attention paid to British writers, there is no reference to Dr. A. F. Hurst's view of the existence of a special type of stomach or duodenum inherently prone to undergo ulceration under conditions that would be ineffective in ordinary persons. Loewy concludes that no one factor, such as the use of unabsorbable ligatures, is the responsible cause of peptic ulcer, but that a combination of factors is necessary. The symptoms of jejunal peptic ulcer usually precede those of the colic fistula, which consist of diarrhoea, foul eructations and vomiting, wasting and loss of strength. Diagnosis is particularly difficult when the symptoms of jejuno-colic fistula come on without previous evidence of a peptic jejunal ulcer, and in such cases a bismuth enema followed by an *x*-ray examination is of the greatest help. The outlook is very bad indeed unless operation is adopted, and even then the tendency to recurrence makes the outlook anxious.

[1] *Les Fistules jéjuno-coliques par ulcère perforant après gastro-entérostomie.* Par le Docteur Georges Loewy. Travail de la Clinique Chirurgicale de la Salpêtrière, Professeur A. Gosset. Imprimerie E. Desfossés, Paris, 1921. (Pp. 223; 3 plates, 11 figures.)

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

The Special Session.

THE special session to enable the Government to submit the articles of the Irish agreement for the approval of Lords and Commons was opened in State by the King on Wednesday, December 14th, and was continued until Monday, December 19th, when Parliament was prorogued by Royal Commission until January 31st. Debates of historic interest took place, and on December 16th there were divisions in each House on the address in reply to His Majesty's speech. An amendment, which had been moved in the Commons, was defeated by 401 votes to 58, and that moved in the Lords was defeated by 160 votes to 47. In each place the address—declaratory for ratification—was then agreed to. His Majesty, in proroguing, intimated that he had "received with deep satisfaction" the assurance of approval of the articles of the agreement and the readiness of Parliament to give effect to the provisions. Only the Irish business was taken; but the usual opportunity for questions to various matters about other subjects was available.

Treatment Allowances.—Mr. J. Davison asked, on December 16th, how many men had been struck off treatment allowances in consequence of the circular of the Ministry dealing with the supervision of out-patient treatment; how many of those struck off allowances were certified by the Ministry of Pensions as fit for any work; how many were ordered to continue treatment without allowances; and whether, in view of the posters issued by the Ministry of Pensions in 1919 intimating to disabled men that during treatment while unable to earn they would be given adequate allowances for the support of themselves and their families, this practice would be reconsidered. Mr. Macpherson regretted that the figures sought were not available. He pointed out, however, that it was not the duty of the medical officers of the Ministry to certify men as fit for work, and the treatment allowances could only be authorized under the terms of the Royal Warrant when in consequence of the treatment provided the man was rendered unable to provide for his own support and that of his family. This was not a new principle, and he was not prepared to recommend any amendment of the Warrant in this respect.

Indian Opium Trade.—In reply to Mr. Gilbert, on December 16th, Colonel Gibb (for the Secretary for India) stated that the total area under poppy cultivation in British India amounted to 156,435 acres in the year 1919–20, and 9,823 chests of opium were exported in that year. The countries which imported this opium were the Straits Settlements, Dutch East Indies, Siam, French Indo-China, Japan, United Kingdom, Hong Kong, British North Borneo, Ceylon, Mauritius, and Fiji Islands. The Minister was not in a position to state how much of the raw opium exported from India to other countries was there converted into prepared opium for smoking.

Russian Famine Relief.—Replying to Mr. A. Williams, on December 16th, Mr. Chamberlain said the Government was fully alive to the serious nature of the famine in Russia. Parliament had voted a sum of £100,000, representing the present value of Government stores, chiefly medical, to be placed at the disposal of the Red Cross Society for the relief of famine in Russia; the original value of these stores was £250,000.

PROFESSOR H. WINTZ has issued a notice stating that the women's clinic of the University of Erlangen, which has hitherto always been open to visitors, is closed for the present. The clinic is being reorganized, alterations made, and new installations introduced. He hopes to open the clinic next year by a course of post-graduate lectures.

A DUTCH pharmacist, Dr. H. Baljet of Arnheim, has been awarded the Davy prize by the University of Geneva for an essay on the dosage of digitalis.

England and Wales.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

A MEETING of the President and General Council of King Edward's Hospital Fund for London for the purpose of awarding grants to the hospitals, convalescent homes, and sanatoriums for the present year was held on December 15th, with Viscount Finlay in the chair. Lord Revelstoke (the honorary treasurer) announced that the amount received for general purposes to December 3rd, 1921, was £221,326. This exceeded the total indicated in the estimate laid down before the Council in November, the increase being due to the action of King George's Fund for Sailors in again providing the amount of the grant of £5,000 to the Seamen's (Dreadnought) Hospital. Last year they had been compelled to draw on reserves to complete the amount required for the ordinary distribution. This year he was glad to say that they were in a more fortunate position. For instance, the legacies received during the last eleven months amounted to £74,000, as against £18,000 in 1920. The Council had decided to distribute a portion of these additional receipts and to keep a portion in reserve, thus effecting a reasonable compromise between their endeavour to afford every possible assistance to the hospitals during this year, and their equal desire to maintain a regular distribution as a stabilizing influence and element in their finance. He had received the following communication from Lady Mount Stephen:

"I have been allowed to tell you by the executors that my husband has left the residue of his fortune to King Edward's Hospital Fund. It is, I believe, practically nearly the whole of his fortune, for the legacies, etc., in proportion, do not amount to anything of importance. Would you, as Treasurer of the King's Fund, make this known to the Council?"

This communication reached them at a moment when their finances were in urgent need of help, and the capital account had been depleted by the extraordinary calls made upon it during the past eighteen months. Several of them were that day mourning the loss of a very dear personal friend; and every member of the Council, and, indeed, every member of the community who might be interested in hospital matters, would deplore the loss of a benefactor who, imposing in his modesty and reserve, was really remarkable for an almost unique breadth and generosity of character.

Sir William Collins, in making the annual statement on behalf of the League of Mercy, said that the meeting of the Council of the League would not be held until the next day, but the League would certainly be in a position to make a contribution of £14,000, possibly more, making a total from its foundation of £323,034 to the voluntary hospitals of London, through the King Edward's Fund, and including extra-metropolitan hospitals, £360,429.

The amount placed at the disposal of the Distribution Committee for allocation amongst hospitals at the present distribution was £210,000. The amount distributed last year at the ordinary distribution was £190,000, apart from the emergency distribution of £250,000 made by the Fund in July, 1920, out of its accumulated funds, and the special distribution of £250,000, which was entrusted to the Fund by the British Red Cross Society and the Order of St. John of Jerusalem for distribution on their behalf in aid of schemes of extension or improvement at hospitals able and willing to treat ex-service men.

The number of hospitals applying this year was 110, as against 108 in 1920. The Alexandra Hospital had moved out of the London area, the Royal Chest Hospital was amalgamated with the Royal Northern Hospital (late Great Northern Central Hospital), and applications had been received from the Evelina Hospital, the Metropolitan Ear, Nose and Throat Hospital, the Roll of Honour Hospital, and St. Bartholomew's Hospital. The total amount of the grants recommended in aid of schemes of capital expenditure was reduced from £36,300 last year to £11,575 this year. The total grants to maintenance amounted to £198,425, an increase of £44,725 over the corresponding total at the ordinary distribution last year.

The statistical report showed that the increase in cost of working still continued, the expenditure of the London hospitals in 1920 being 135 per cent. more than in 1913, whereas their income had increased by only about 66 per cent. Lord Cave's report showed that the aggregate increases in expenditure in London, where comparative statistics of cost of working were circulated by the King's Fund, were considerably smaller than the aggregate increases at the provincial hospitals.

UNIVERSITY COLLEGE OF SOUTH WALES.

The preliminary list of subscriptions to the appeals by the University College of South Wales, which in total amount to £250,000, for the provision of additional buildings and laboratory equipment and for the adequate remuneration of the staff, amounts to £76,300. The subscriptions include £50,000 and £20,000 respectively from Lord Glanely and Mr. D. R. Llewellyn, President and Treasurer of the College. Messrs. Morgan, Wakley and Co. have contributed £2,100, and £1,050 each have been subscribed by Sir J. Wyndham Benyon, Sir Herbert Cory, Mr. Daniel Ratcliffe, and the executors of the late Mr. Richard Beaumont Thomas.

BIRMINGHAM MEDICAL BENEVOLENT SOCIETY.

To commemorate the centenary of the Birmingham Medical Benevolent Society, which was founded on November 27th, 1821, a dinner was held at the Queen's Hotel, Birmingham, on November 25th, when the President, Mr. George Heaton, and fifty-two members and guests attended. The object of the society is to relieve indigent widows and children of members of the society, and also members who have themselves fallen into necessitous circumstances. The society has during the hundred years of its existence been able to distribute a sum approximating £35,000. In several cases the total amount of grants has exceeded £1,000, and at present £775 is granted annually to three practitioners and twenty-three widows and children of deceased members. The chief guest of the evening was Mr. Neville Chamberlain, M.P., who, in an able speech, proposed the toast of the society, which was replied to by the President and the Senior Treasurer, Mr. F. Marsh. The latter, in his reply, made an appeal for a larger membership to enable the society to make more liberal grants to deserving cases. Speeches were also made by the Lord Mayor of Birmingham, Sir Edward Malins, Dr. James Neal, Bishop Hamilton Baynes, and Dr. H. G. Dain, and a most successful and pleasant evening was spent. Particulars concerning membership of the society, and forms of application, may be obtained from the honorary secretary, Dr. L. G. Parsons, 52, Newhall Street, Birmingham. Any registered medical practitioner, male or female, regularly practising within fifty miles of Birmingham, is eligible as a member of the society. The subscription is one guinea, payable annually for twenty-one years; or the whole may be compounded by the payment of one sum of 16 guineas.

VETERINARY AND HUMAN MEDICINE.

Professor Share Jones, of Liverpool University, speaking at Exeter on December 8th, said that the progress of veterinary science in this country had been retarded and its real mission obscured by the popular view that it consisted solely in the doctoring of sick animals, and in consequence it had become associated also entirely with the Ministry of Agriculture. The result was that its work was generally assessed at live-stock value, but nothing could be more fallacious; the work had a much more far-reaching effect on the nation's welfare. Lord Haldane's Royal Commission on University Education, in 1918, reported that the modern veterinary surgeon should pass through an exacting programme of education and a course of training as specialist as thorough as the student of human medicine; it held, further, that the future development of veterinary medicine depended upon its adoption of the methods of dealing with disease that had been worked out for human pathology. The Commission considered that research in animal disease must of necessity be associated with research in human disease, and that a department dealing with animal disease had become as necessary to a school of investigation in human medicine as the association with human pathology was to the investigation in animal disease. Obviously the proper Ministry to take charge of veterinary science was the Ministry of Health. It was absurd that rabies in animals, for instance, should be dealt with by the Ministry of Agriculture and the same disease, hydrophobia, in man, by the Ministry of Health.

Scotland.

GLASGOW VICTORIA INFIRMARY.

THERE has just been issued the thirty-fourth annual report of the work of Glasgow Victoria Infirmary, its dispensaries, and its convalescent home at Largs. At the Infirmary 4,348 in-patients were treated, 280 of whom remained in hospital at the close of the financial year. The average residence of patients was twenty-five days, compared with 25.2 days for the previous year, and the cost per patient was £10 9s. 3d., against £10 4s. 3d. At Bellahouston Dispensary 24,560 out-patients attended, and at the convalescent home 498 patients were treated. The total ordinary income of the Infirmary was £41,904, and the total expenditure £49,161, the deficiency of £7,256 contrasting favourably, however, with the deficiency of the previous year of over £11,000.

QUEEN MARY NURSING HOME, EDINBURGH.

Since the opening of the Queen Mary Nursing Home, Edinburgh, in 1913, the demand for admission has exceeded the accommodation available. The adjoining house has therefore recently been purchased and connected with the original building, and with this addition sixty beds will be available for medical and surgical cases. The Queen Mary Nursing Home was opened as a nursing home for persons with limited means who were unable to meet the charges of private homes and did not wish to go into a charitable institution. The initial cost of construction and equipment was defrayed by public subscription, and the home is self-supporting, the charges being arranged so that it is run simply to pay expenses. It is managed by a committee, three members of which are appointed by the Edinburgh Branch of the British Medical Association, and Sir Robert Usher is chairman.

Ireland.

THE DUBLIN PHARMACOPOEIAS.

ON St. Luke's Day, 1920, the Registrar, Dr. T. Percy C. Kirkpatrick, the author of *The History of the Medical Teaching in Trinity College, Dublin, and of the School of Physic in Ireland*, submitted a life of "Edward Hill, M.D. (1741–1830), Regius Professor of Medicine in the University of Dublin," to the meeting of the College, and on the same day this year he gave an account of "The Dublin Pharmacopoeias," thus continuing the history of the college and showing its influence on medicine in Ireland. By the Medical Act of 1858 the General Council of Medical Education and Registration of the United Kingdom was empowered to publish a pharmacopoeia for the United Kingdom to supersede those previously published for England, Scotland, and Ireland by their respective Royal Colleges of Physicians. The first edition of the *British Pharmacopoeia* collated those of London, Edinburgh, and Dublin, and appeared in 1864. As regards these separate pharmacopoeias, the Royal College of Physicians of London came first into the field by bringing out on May 7th, 1618, the *London Pharmacopoeia*, a small folio of 164 pages, which became authoritative in England and in the town of Berwick-on Tweed, and in 1699 the Edinburgh College followed suit by publishing a pharmacopoeia for Scotland; on June 5th, 1721, the President and Fellows of the King and Queen's College of Physicians began to consider seriously "the making of a dispensatory for this City (Dublin) and Kingdom," but the first Dublin Pharmacopoeia did not appear until 1806, the delays which occurred being fully detailed by Dr. Kirkpatrick. Such a work was obviously much needed, for in the charter granted to the Irish College by William and Mary in 1692 the President and Fellows were given authority to enter the houses or shops of apothecaries and druggists to examine the medicines there, which, if found "to be defective, corrupted, or not meet or convenient to be used in medicine for the health of man's body," were to be "burned or otherwise destroyed." But as neither a standard of the purity of the drugs, nor of the method of manufacturing compound medicine, had been laid down, the difficulty in deciding fairly on the drugs must have rendered the inspection of little use. In 1721, pending the issue of the Dublin Pharmacopoeia, the Irish College recommended the use of the London Pharmacopoeia, but it did not make it official as it was in England, though it remained as the standard in Ireland for eighty years. The first Dublin Pharmacopoeia was an octavo of 297 pages in Latin, and though only 500 copies were printed for the use of the whole of Ireland, it was not until 1826 that a revised edition saw the light; this work was severely criticized by Michael Donovan (1791–1876), whose name has been preserved in the solution of iodide of arsenic and mercury. On November 1st, 1830, the President and Fellows received a letter from Thomas Watson, M.D., Secretary of the Committee appointed by the Royal College of Physicians of London for the purpose of revising the pharmacopoeia of that College, asking if they would join with the London and Edinburgh Colleges in the formation of a general pharmacopoeia for the United Kingdom. This proposition, which anticipated the action of the Medical Act of 1858, was politely declined. The last edition of the Dublin Pharmacopoeia, brought out in 1850 by Professor John Apjohn, was in English, and was much improved by the adoption of the system of weights and measures advocated by Donovan in his criticism of the previous issue.

Correspondence.

HOSPITALS IN THE TERRITORIAL FORCE.

SIR,—Your article (December 10th, p. 997) on the correspondence between the Senate of the University of London and the War Office in reference to the reorganization of Territorial General Hospitals is the first intimation to many of your readers that this matter is receiving attention.

Two fundamental changes appear to be contemplated by the War Office—namely, the abolition of the *à la suite* system and the requirement that the whole of the personnel must be medically fit for general service and must take the obligation to serve overseas. With these two changes no one, I imagine, will be found to quarrel; certainly no Territorial who served overseas in the late war.

The Territorial General Hospitals as originally planned were intended as a provision against a possible invasion and military operations in the home country. The danger of this does not for the present exist. The Territorial Army is therefore no longer a "Home Defence Force," in the sense that it will stay at home to defend our homes. It is not surprising that the scheme for the reconstructed Territorial Army should include General Hospitals ready to serve overseas when mobilization of that Army becomes necessary. This is a contingency which we all hope may not arise, but, if it should, the medical services must be better prepared than they were in August, 1914. It is with this object in view no doubt that the War Office has laid down the conditions quoted in your article for eligibility for appointment to the General Hospital List. These conditions include the innovation that no young medical officer can be placed on the General Hospital List unless he has seen active service (either overseas or at home) or has completed three and a half years' service in what for convenience may be termed a "field unit." The intention of the War Office is evident. Some measure of military training is regarded as the essential complement to professional skill.

My experience persuades me that the policy of the War Office is sound. The principle that an army doctor shall be an officer as well as a doctor does not inevitably lead to his becoming an administrative automaton, hide-bound with red tape. The officer who was apt, in the late war, to lay so much blame upon red tape was as often as not an untrained civilian who, from ignorance of the workings of the machine, was unable to make his bit of it work. It was not always red tape that clogged the wheels; in the medical service it was frequently the man who said, "I'm a doctor, and I can't be bothered with all this army nonsense."

In this detail the proposals of the War Office should be supported. There were quite enough doctors taken from civilian life who showed themselves able to add to high professional attainments a mastery of the duties of an officer to justify the War Office in asking for proof of this combination in officers on the General Hospital List. At the

same time, the "authorities" need an occasional reminder that among the minor horrors of the war were a certain number of officers who attained high rank as administrators whose sole claim to be so regarded was ignorance of and indifference to professional knowledge of any kind. The best administrative officers could not tolerate anything less than the best professional work in their units.

If as a profession we support the War Office proposals it must be on terms. The War Office asks that the men who staff the Territorial General Hospitals shall have some training in the administration of the medical service. We may agree provided some guarantee is given that when a medical officer has added this training to his other qualifications, promotion to higher rank and to higher pay shall not be confined to the specialist in administration.

The last paragraph of the War Office letter promises a great reform—namely, the formation of hospitals for home service only, to be staffed by officers who, by reason of age or medical category, are not eligible for service overseas.—I am, etc.,

Clifton, Bristol, Dec. 14th. J. A. NIXON.

SIR,—The correspondence between the Army Medical Department and the Senate of the University of London raises the whole question of the future of the Territorial General Hospitals. Perhaps the experience of one who served for five years in one of these institutions during the war may have some bearing on their organization in the future and the continuance or non-continuance of the *à la suite* system.

The plan of Lord Haldane and Sir Alfred Keogh of securing the services of the consultant and specialist members of the profession for home service was, on the whole, admirably conceived, and certainly resulted in the best medical and surgical skill in the country being at the disposal of the sick and wounded soldier. That is beyond controversy. Unfortunately there were gaps in the organization which were never properly filled up from first to last.

1. Almost from the beginning the administrators were given, or arrogated to themselves, the position of commanding officer, with absolute control, not only of the administrative work and of the non-medical personnel, but of the distinguished men who formed the medical staff. There was no provision in the organization to ensure that the officer holding that position should be a man of previous hospital experience.

2. There was no provision for a medical board on which the officers who really did the medical and surgical work should sit to have an effective voice on the professional work of the hospital. They were merely officers under the military orders of the administrator.

3. There was no provision for resident house-surgeons to carry out the orders of the medical officers.

The system by which our great civil hospitals is carried on is the result of hundreds of years' experience. A medical board and the existence of a resident staff is the very essence of it. It was a mistake to ignore that experience completely in setting up the Territorial General Hospitals. One evil result was the absurd system by which highly qualified consultants spent days of valuable time in the routine work of an "orderly officer" in merely signing hundreds of letters and forms issuing from the office of the C.O. The letters themselves were often written by a sergeant-major or even less highly placed N.C.O., but the mechanical work of attaching a signature had to be done by an officer who was a specialist or consultant, to the waste of his time and energy and the sacrifice of his own proper work, which suffered grievously thereby.

The fact that one man was a lieutenant-colonel or a major and that another was only a captain depended not on the professional status of the officer, but on the accident of original appointment; yet to the regular D.D.M.S. rank was everything. One of these gentlemen, telephoning to the hospital one day, was informed that there was nobody above the rank of captain there at the moment; he declined even to speak on the telephone to any officer not of field rank! though the captain on duty as orderly officer was a physician on the staff of the great civil hospital of the town and a man of the highest professional status. The duty of the subordinate officer was not to suggest but to obey. All intelligence was presumed to centre in the higher ranks, although the D.D.M.S. might be a man of very small professional experience who had never even held a resident appointment in a hospital.

The professional staff of the general hospitals was absurdly excessive if only they were called on to do their proper work and not turned into clerks or house-surgeons. If the Territorial General Hospitals had been demilitarized, if the officers had been styled physicians and surgeons and specialists instead of lieutenant-colonels and majors and captains—if, that is, these institutions had been run on the lines of the great civil hospitals, they would have been only half as expensive and twice as efficient. The red tape, the endless correspondence, the failure to secure proper equipment, the want of resident house-surgeons, the friction and the ill feeling, all these resulted from the attempt to run great hospitals on the lines of the antiquated Army Medical Service.

The scheme the Army Medical Department has now submitted reeks of all the evils of purely military control of what are not, in essence, military units at all. If Territorial General Hospitals are again to be set up they should be under Territorial control. There should be a system of medical boards throughout; both a central medical board at the War Office, and medical boards at each hospital to direct the real professional work of the hospital, and with real power. A proper system of house-surgeons should be instituted. The work of the administrator should be limited to administrative and military work only, though he should, of course, be a member *ex officio* of the medical board. The clerical work should be done by clerks, and not by doctors. Responsibility should be decentralized and the control of the Regular D.D.M.S. limited.

It would be better were rank and uniform among the professional staff abolished, and that they should be appointed according to their professional qualifications and seniority, each to do the work for which he is best suited. This, however, is perhaps too much to expect the Army Medical Department to consent to, and if the hospital goes abroad military status becomes necessary. But is there any reason why the home hospitals should be sent abroad? Is there no room for a scheme by which the home hospitals should be, as before, served by the best medical and surgical men in the country, although they may be unfit, by age or other reason, to serve out of England? It has been said that the *à la suite* system failed; if it did it was because of the manner in which the medical officers' time was wasted and their initiative crushed. That they did their work with great enthusiasm and devotion, in the face of every obstacle and discouragement, is undeniable. They have received scant recognition: neither promotion nor decoration came their way in the main. But it was the civilian doctors who started every improvement in the treatment of the soldier, and that is the object of general hospitals. It is to be hoped that the British Medical Association will insist on having a say on this important matter.—I am, etc.,

December 14th. LATE CAPT. R.A.M.C. *à la suite.*

HOSPITAL POLICY.

SIR,—Hospital policy is by agreement a matter for the calmest deliberation. It has been so treated in all professional meetings at which I have heard it discussed, and so also in most of the correspondence thereon in the JOURNAL. But Dr. Garratt's letter in the issue of December 17th, p. 1056, is a lamentable exception to the rule. Either by reason of the intensity of his feelings, or from forgetfulness, he allows himself to distort facts in a way that would be scarcely tolerable in the perfervid oratory of a political partisan.

He criticizes the policy of the Association relative to the formation of a hospital "Staff Fund," for he says that this

> "in the opinion of the able Cave Committee, which held twenty-eight meetings and examined ninety-three expert witnesses, many being eminent medical men, 'would endanger the future of the voluntary hospitals.' Indeed, this Committee quoted with approval the opinion that 'the bottom would drop out of the voluntary system.'"

On turning to the Cave report, par. 50, which is the sole reference to the staff fund, we find, after a brief description of the purpose and method of such a fund, a statement that the practice is supported by the British Medical Association respecting patients sent to a hospital by a

public authority; and then: "On the other hand, the honorary staffs of some hospitals are unwilling to share in such a fund; and two distinguished physicians expressed the view that if the medical staffs came to be subsidized to any substantial extent, 'the bottom would drop out of the voluntary system.'"

The opinion of the committee itself is expressed thus:

"If the system of carrying a percentage to a staff fund is confined to cases where the full cost of maintenance and treatment is paid by or on behalf of the patient, not much objection can (we think) be taken to it; but any extension of the practice beyond those limits appears to us to endanger the future of the voluntary hospitals."

The mildness of the committee's opinion, and the slenderness of the evidence upon which they came to their conclusion, is in striking contrast with the false emphasis which Dr. Garratt puts upon it. Dr. Garratt's summaries of the proceedings of the Conference of the Staffs of Voluntary Hospitals held on December 21st, 1920, and of the Annual Representative Meeting at Newcastle, are as distorted as his citation of the Cave Committee's report.

Setting aside his "facts," the real reply to his argument lies in the definition of a "voluntary" hospital. On that point there have been many misapprehensions. A voluntary hospital is one that is under voluntary and independent management, as opposed to a State or municipal hospital, which is managed by the representatives of the rate or tax payers. That is the sole test of a voluntary hospital. Whether the patients pay or do not pay, or whether the staff is paid or is not paid is immaterial, and in no way affects the "voluntary" status of a hospital if its management is independent and voluntary. As a matter of fact, the "two distinguished physicians" who expressed their view on the staff fund to Lord Cave's Committee, which is quoted above, belonged to a voluntary hospital which has paid the members of its staff honoraria for many years, yet that hospital remains voluntary.

So long as a voluntary hospital is a charity members of our profession will be as fully prepared to do philanthropic work in at least equal proportion to other sections of the community; but in so far as a hospital becomes a place for the reception of paying patients, whether they pay in whole or in part, it is inevitable that the demand of the medical staffs that they should receive remuneration for any such work, if only in some cases by a token payment, will become more insistent throughout the country.—I am, etc.,

N. BISHOP HARMAN,
London, W., Dec. 16th. Chairman of the Hospitals Committee.

THE CAUSES AND PREVENTION OF BLINDNESS.

SIR,—I wish to make a little neurological comment on Mr. Bishop Harman's admirable paper on the cause and prevention of blindness (November 5th, p. 727). That I like to do so will be evident to anyone who has read Snellen's and my paper in the *Nederlandsche Tijdschr. v. Geneeskunde*, 1909, ii, No. 15, being a report of the examination of 100 inmates of the school for blind children in Amsterdam. In more than 20 per cent. we found either certain or probable brain disease spontaneously (or too late operatively) cured. It seems to me that in the National Institute of the Blind the 7 cases of Group II, the 105 cases of optic atrophy of the school children, and the 55 private ditto cases should be equally examined from our point of view by a competent neuro-surgeon, or a neurologist in combination with an ophthalmologist. It will then be interesting to speculate as to in what percentage of these unfortunates a palliative operation in time might have prevented the complete blindness, for it was one of our results that this percentage was a very great one if we took the really completely blind cases apart.—I am, etc.,

Amsterdam, Nov. 29th. L. J. J. MUSKENS.

PERFORATION OF THE NASAL SEPTUM IN COCAINE TAKERS.

SIR,—Dr. Crookshank (p. 1055) takes exception to my logic because I stated that perforation of the nasal septum was common in people who had no access to cocaine, and that its presence in cocaine takers must not be regarded in the relationship of cause and effect. I venture to think, however, that most rhinologists will agree with my point of view.

Dr. Crookshank's original letter was written apropos of a case under his care which he diagnosed as a "cocaine taker" because the latter had a perforated nasal septum, although "other competent medical men" had already labelled the patient "syphilitic." Logically, this patient might have been called chrome worker, granite cutter, metal grinder, or rag sorter, if he had not revealed his occupation or secret vice.

The question is of considerable interest, but the dangers attached to laying much emphasis on septal perforation as diagnostic of the cocaine habit can be very serious. As Mr. Tilley has very ably placed the necessary note of warning before the inexperienced reader, I merely wish to endorse what he says.—I am, etc.,

London, W., Dec. 16th. JOHN F. O'MALLEY, F.R.C.S.

"STIMULANTS."

SIR,—Dr. E. Weatherhead takes me to task for referring to alcohol as a stimulant. He upbraids me for perpetuating what he regards as a popular fallacy which it may take centuries "to exorcise from the mind of the general public." He thinks one might have expected better things from me, for he says it has been clearly proved "that alcohol is a narcotic and *not* a stimulant."

As a member of the British Society for the Study of Inebriety, of which I was for several years president, I have heard the action of alcohol and alcoholic drinks discussed almost *ad nauseam*, and I have listened to some wise and much foolish talk on the subject. I have even heard a learned professor of therapeutics assert that new whisky has just the same effect upon the human organism as the matured article.

The fact is, alcoholic drinks affect the body in many different ways, according to the nature and quantity of the beverage imbibed, and the age, constitution, and state of health of the imbiber. To state categorically that alcohol in the form of beer, spirits, or wine is a narcotic is assuredly not to state the whole truth. That alcohol in one or other of these forms may act as a narcotic is certain; that it may, as Sir Samuel Wilks was wont to insist, act as a sedative is also certain; and it is equally certain that under some conditions it may act as a temporary reviver or stimulant.

I do not say that alcohol always acts as a stimulant, in perfectly sound health, for instance. In the majority of cases it does not enhance the work of brain or muscle. Nor have I any great faith in alcohol as a therapeutic agent, and I even believe that the health of the community would be improved if we lost the art of brewing this subtle essence; but this does not blind me to the fact—the glaring fact—that under certain conditions alcoholic drinks are stimulating.

Does Dr. Weatherhead seriously maintain that in states of exhaustion alcohol may not have a temporary reviving—that is, stimulating—effect; that, for instance, an aged subject slowly and painfully recovering from a severe attack of influenza may not sometimes be temporarily revived by a glass of champagne? Or, again, that a man habitually consuming two bottles of whisky daily is not similarly revived when, after several hours of abstinence, he has recourse to the bottle?—I am, etc.,

London, W., Dec. 12th. HARRY CAMPBELL.

AMPUTATION OF MANGLED LIMBS DURING COLLAPSE.

SIR,—This letter has been prompted by the report of an accident in to-day's lay press; a report of an exactly similar case appeared about a year ago.

A man, aged 51, had both legs badly crushed in a motoring accident. He was carried three-quarters of a mile to a hospital. The report then goes on to say: "Immediately on Mr. K——'s arrival at the Cottage Hospital both legs were amputated at the thigh, but the injured man expired shortly after nine o'clock last evening"—that is, a few hours after the accident. The word "but" should read "and naturally."

Two explanations are given by those who make a practice of amputating while the patient is collapsed. One is, "Well, you see, the case was hopeless from the first," a statement which carries its own refutation, since, if the case was obviously hopeless, amputation was unjustifiable.

The second and more usual explanation is that the limb, being injured beyond possibility of repair, if not removed at once would certainly cause severe and fatal sepsis, with a probable reference to the risk of absorption of the products of disintegrated tissues (histamine, etc.) which, in the laboratory animal, are capable of producing a condition resembling that of shock.

The argument is fallacious, because the deferring of amputation until the collapse has passed off does not necessarily involve the occurrence of severe sepsis, nor is it certain that severe sepsis, even should it occur, must be fatal. The one certainty is that amputation during collapse obliterates any chance of survival which may still exist, and causes death.—I am, etc.,

Plymouth, Dec. 15th. C. HAMILTON WHITEFORD.

Obituary.

W. GORDON SANDERS, M.B.EDIN., M.D.MONTPELLIER, Cannes.

THE death of Dr. Gordon Sanders from pneumonia, at the comparatively early age of 56, will be deeply regretted by a wide circle of patients and friends. William Gordon Woodrow Sanders was born in Edinburgh in 1865, the eldest son of William Sanders, F.R.S., Professor of Pathology in the University of Edinburgh. Dr. Sanders's mother was Miss Georgina Wright of Norwich, whose sister Helen married Sir William Gairdner, K.C.B., F.R.S., Professor of Medicine in the University of Glasgow. Gordon Sanders was educated at Fettes College, and, taking up the family tradition, entered the medical school of the university. His academic career was distinguished, and he graduated with first class honours; he held resident appointments in the Royal Infirmary and the Royal Hospital for Sick Children. To be President of the Royal Medical Society is justly esteemed a distinction far above academic triumphs, and this honour came to Sanders. With such encouragements he started in practice as a physician in Edinburgh, becoming a Fellow of the College of Physicians in 1894, and physician to the Western Dispensary.

This promise of a brilliant career as a consulting physician was cut short by the development of pulmonary disease. With characteristic courage, Sanders at once proceeded to Montpellier, where he graduated in 1896, thus obtaining the right to practise in France. He then settled in Cannes, where professional success rapidly came to him. A general physician of wide knowledge and sound judgement, he gained the respect and affection of patients and colleagues alike. Sanders had early been attracted to the study of diseases of the heart. The new conceptions of cardiac diseases and the methods for their study and treatment originated by his friend Sir James Mackenzie were embraced by Sanders with enthusiasm. He contributed papers on cardio-pulmonary murmurs and congenital malformations of the heart to the medical journals. The scanty leisure available from a large practice and his untimely death have robbed medical literature of the fruits of the clinical experience of his later years. Sanders was a marked personality, wise, kindly, and endowed with a genial humour which was the delight of his friends. Dr. Sanders married Miss Georgina Frances Darnell. His eldest son held a commission in the Flying Corps throughout the war. His second son, an officer in the West Yorkshire Regiment, fell in 1918. His third son is a medical graduate of Edinburgh. They with his three daughters, one of whom is a member of the medical profession, are left to mourn his loss.

THE death occurred in Salisbury, Rhodesia, on October 27th, of Dr. HERBERT EDWARD HICK, who was chairman of the Mashonaland Division of the British Medical Association. Dr. Hick was born in Leeds, Yorkshire, and was educated at the Leeds Medical School, qualifying M.R.C.S.Eng. and L.R.C.P.Lond. in 1889. He commenced practice at Bradford, but soon left, with his family, for South Africa. He settled temporarily in Natal, but prior to the outbreak of the South African war he went to Rhodesia, and practised in Salisbury until 1903. He then left for the Transvaal, and settled at Volksrust, where he practised for nine years. During that time, in addition to his other duties, he was appointed medical officer of health, and for several years was a member of the town council. Dr. Hick returned to Salisbury in 1912, and actively associated himself with the social life and development of the town. He was appointed medical officer of health, and his devotion to duty was marked by his numerous activities to enhance the welfare of the community. In addition to an extensive practice and his duties as M.O.H., he was chairman of the Hospital Advisory Board, and was also a prominent Freemason. Dr. Hick was exceedingly well known throughout Rhodesia. Of a kindly nature and charming disposition, he won a host of friends wherever he went, and his death comes as a personal loss to a large section of the community. He leaves behind him his widow, two sons, and a daughter.

THE death of Dr. GREGORY PAUL JORDAN, which took place in London on December 4th, at the age of 64, removes one of the oldest and most popular residents of Hong Kong. Dr. Jordan graduated M.B., C.M. at Edinburgh University in 1880, and afterwards studied in Vienna and Paris, and at St. Thomas's Hospital, obtaining the diploma of M.R.C.S.Eng. in 1884. Proceeding to Hong Kong in the eighties, he was appointed colonial surgeon, and when that post was abolished became health officer of the port, an appointment he held until his death. With Sir Patrick Manson and Sir James Cantlie he was one of the founders of the old Hong Kong Medical College; he was consulting surgeon to the Alice Memorial Hospital, and during the war was surgeon-superintendent of police. Although advised to take a holiday some time ago, he remained at work and continued to act as vice-chancellor of Hong Kong University and professor of tropical diseases. Recently the degree of LL.D. was conferred upon him.

DR. GEORGE FREDERICK ROSSITER, who died recently at Weston-super-Mare, aged 69, had been in failing health for some years. He commenced his professional studies in 1868 at the Taunton and Somerset Hospital, and in 1870 entered St. Thomas's Hospital, where he had as a student a brilliant career, being awarded the Cheselden medal and the Treasurer's gold medal. He qualified with the diploma of M.R.C.S.Eng. in 1874, obtained the M.B.Lond. degree two years later, and was successively house-surgeon, house-physician, and resident accoucheur at St. Thomas's. In 1877 he commenced private practice at Weston-super-Mare, and three years later was elected honorary surgeon to the hospital there, where for the next twenty-five years he did excellent work. On his retirement from active practice in 1908, on account of ill health, he was appointed consulting surgeon. Dr. Rossiter was for nearly forty years a member of the British Medical Association, but he took little active part in public life. He was a man of high character, with a deep sympathy for others, and he did a multitude of good works in an unobtrusive manner. He is survived by his widow and four sons.

DR. THOMAS BROWNLIE MCKENDRICK died suddenly at Southport on November 30th, at the early age of 39. He received his medical education at Glasgow, and obtained the triple qualification in 1909; in 1918 he became an F.R.F.P.S.Glasg. He joined his brother in practice at Rochdale, and on the outbreak of the war he offered his services, being appointed to a commission in the R.A.M.C. in October, 1914. As a result of his war service he developed heart disease and was invalided to England in 1918. He was unable to resume work at Rochdale, and commenced the practice of electro-medical therapeutics at Southport. For the past three years he also held the appointment of neurologist to the Preston Board of the Ministry of Pensions. He had been a very keen angler all his life, and wrote several magazine articles on fly-fishing. He leaves a widow and two young children.

DR. HENRY CLARENCE WILLIAMS, who died at Boston, U.S.A., on November 8th, aged 66 years, was born in Manchester, England. He became a licentiate of the Royal College of Physicians, Edinburgh, in 1880, and a member of the College two years later. He went to America in 1887, and had practised in Boston for many years.

Universities and Colleges.

UNIVERSITY OF OXFORD.

AT a congregation held on December 17th the following medical degrees were conferred:

D.M.—W. E. Waller.
B.M.—M. E. Shaw, D. B. Pauw, C. C. H. Chavasse.

UNIVERSITY OF CAMBRIDGE.

THE following candidates have passed both parts of the examination for the Diploma in Psychological Medicine and are entitled to receive the diploma:

M. A. Archdale, S. Kelly, G. A. Lilly, R. A. Noble, W. D. Wilkins.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on December 14th, the Vice-Chancellor (Sir Sydney Russell Wells, M.D.) being in the chair.

Mr. R. H. Aders Plimmer, D.Sc.Lond., was appointed as from January 1st, 1922, to the University Chair of Chemistry, tenable at St. Thomas's Hospital Medical School. From 1902 to 1904 he was Grocers' Company's Research Student at the Lister Institute of Preventive Medicine, and in the latter year was appointed Assistant for Physiological Chemistry at University College, at which he was later appointed to teach chemistry to medical students. In 1912 the Senate conferred on him the title of Reader in Physiological Chemistry. Since 1919 he has been head of the Biochemical Department of the Rowett Research Institute of Animal Nutrition at the University of Aberdeen and North of Scotland College of Agriculture, and Research Lecturer in Applied Biochemistry in the University of Aberdeen.

Regulations for the new degree of Bachelor of Dental Surgery were approved for internal students.

Sir Sydney Russell Wells, M.D., was reappointed the representative of the University on the General Medical Council for 1922–23; and Professor A. D. Waller, M.D., F.R.S., was appointed to represent the University at the unveiling of a memorial to Pasteur, in commemoration of the one hundredth anniversary of his birth, to take place at Strasbourg in May, 1923.

LONDON SCHOOL OF TROPICAL MEDICINE.

The following were successful at the examination at the end of the sixty-seventh session:

*E. P. Hicks (winner of "Duncan" Medal), *E. S. Godlieb, *G. D. English, *E. A. C. Langton, Miss A. Reubens, C. F. Chenoy, A. G. Boggs, C. U. Lee, J. R. McVail, B. Shaha, F. G. Spear, J. A. Young, H. C. Wilkinson, H. O. Hofmeyr, G. N. Cossery, J. Dimock, J. Pedris, J. D. Gazder, H. S. Hutchison, A. H. Mitchell, G. D. K. Waldron, Miss Reba Hunsberger, Major J. A. A. Kernahan, I.M.S., P. M. Nanavati, M. Remy, A. Bindari, M. H. Eid, J. F. Misquitta, Captain D. F. Taylor, I.M.S., W. Spiteri, M. Shalaby, H. Buchanan, K. C. Kirti.

* With distinction.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examination indicated:

M.B., CH.B. (WITH HONOURS).—*Class I:* *†J. L. Armour, ‡*C. A. Wells. *Class II:* *C. H. R. Carmichael, ‡E. N. Chamberlain.

M.B., CH.B.—*Part III:* O. A. Akjaly, J. R. Bhatia, H. R. Chibber, A. C. Crawford, Helen M. Duvall, I. S. Fox, R. A. Galway, F. G. Latham, J. F. C. McColl, Kathleen M. Platt, Gladys Rutherford, F. C. H. Sergeant, N. S. Taylor, W. T. de V. Thomson. *Part II:* W. H. A. Dodd, G. T. Krajewski, C. B. Lewis, G. F. G. Prideaux, G. Sanders, E. R. Smith, Enid F. Stowell, A. Weisberg, D. A. Woodeson. *Part I:* A. R. D. Adams, J. Berkson, R. W. Brookfield, T. L. Bulmer, I. Casdan, W. J. B. Chidlow, R. G. Cooke, R. L. Corlett, I. H. Davies, Hilda M. Davis, F. Earlam, F. S. Fowweather, Susan Guck, H. Graf, J. R. Griffiths, A. J. Hawe, C. W. Healey, S. Hesselberg, Elizabeth Hunt, J. E. Johnson, F. H. Jones, A. Kefalas, T. J. Kirkpatrick, D. A. Levin, Eileen M. Lloyd, Marion R. Lunt, D. Macfarlane, Mary M. McMillan, P. Madan, P. Malpas, C. H. Owen, Eleanor M. P. Pearson, J. D. O'M. Poole, E. L. Roberts, §J. Roberts, Dorothea W. Rogers, J. A. Scott, J. F. D. Shrewsbury, E. R. Smith, J. R. A. Tallack, Dorothy A. Taylor, Elizabeth M. Theron, V. T. Thierens, H. A. Thomas, R. W. Thomas, §A. Tumarkin, E. J. Whymark, H. P. Widdup, A. G. Wilkinson, E. B. Wilkinson, J. Williams.

D.T.M.—G. P. F. Allen (recommended for the Alan H. Milne Memorial Medal). C. R. Corfield, A. Hamid, B. W. Longhurst, G. A. Macvea, H. R. Madan, W. P. Mulligan, S. S. Shri Kent.

* Distinguished in Surgery. † Distinguished in Obstetrics.
‡ Distinguished in Medicine. § Distinguished in Pathology.

UNIVERSITY OF EDINBURGH.

AT the graduation ceremonial held in McEwan Hall, on December 16th, Sir Alfred Ewing said that in a comparison with fourteen British universities, Edinburgh taught the largest number of students, and gave its teaching at the least cost per head. Taking the fourteen large universities of England altogether—Oxford and Cambridge were necessarily left out, because their finances were too obscure to be understood—there were about 26,000 students, at a total cost of £65 per head. That meant that the universities had actually to find £65 annually for each student that they taught. Out of that cost, the student contributed on the average £25 in fees, and the remainder had to be found somewhere. They in Edinburgh were so fortunate as to receive now £70,000 a year from the State, equivaleut to £16 per head. Their endowments amounted to £8 a head, and their fees to £22 a head. The cost to the University was £47: and if they took the three largest Scottish universities together, the cost per student was £49, of which the student found only £21. For every £9 that the University found, the student found only £4. When they emerged from the war the universities were in a parlous condition.

The following medical degrees and diploma were conferred:

M.D.—G. Ap Thomas, J. J. R. Binnie, Alice Bloomfield (with First Class Honours), *C. C. Brown, S. B. B. Campbell (with First Class Honours), **Major V. T. Carruthers, R.A.M.C., *Major A. G. Coulile, I.M.S., *F. A. E. Crew, *Major H. R. B. Gibson, I.M.S., *R. L. Girdwood, G. H. Gunn, G. Lange, D. Lennox, J. B. Lloyd, *B. Morrison, H. Patley, Ella F. Pringle, R. H. Pulipaka, A. O. Ross, J. H. M. Sandison, H. J. Slane, A. K. Towers.

M.B., CH.B.—R. Abramsky, J. C. Adam, C. S. Appleyard, E. Arcoumena, C. G. Auld, C. T. B. Benson, L. R. Bergson, Susan A. Binnie, J. M. Blair, R. P. Bliss, J. M. Bonar, G. Brewster, Agnes G. Brough, D. L. Brown, C. Brownlee, W. S. Burr, ‡K. F. Caird, A. Campbell, D. Campbell, G. G. Campbell, C. G. Catto, C. Henri-François de Chalus, E. Clark, D. R. Clarke, Matilda L. Craig, ‡D. R. Cramb, J. C. Cruickshank, A. H. Deighton, J. A. Douglas, A. MacG. Duff, Jeannie P. Dunn, Katrine Dunn, Evelyn B. G. Ewen, G. B. Flint, Charlotte E. Forsyth, J. A. Fraser, Eileen R. Freeman, F. L. A. Gacé, Marjorie Geen, †O. S. Gibbs, N. Giblin, Doris M. Gibson, Helen E. Gibson, A. R. Gilchrist, I. S. Hall, T. Harrison, Isabella M. Hay, W. B. E. Hughes, E. J. Hunter, R. H. R. Innes, B. Isaacson, Inez M. Y. M. Jenkins, C. I. L. Jones, †J. O. Kelly, Marjorie C. Kerr, A. King, J. Lovius, P. J. McDiarmid, Jane W. Macdonald, W. S. Macdonald, G. S. Mackay, G. W. J. Mackay, J. C. MacKay, H. D. McKinna, H. McNair, J. W. Mason, ‡D. S. Middleton, I. G. Middleton, Ann L. Morrison, Q. M. Musa, S. S. Nicholson, G. Ogilvie, M. M. Ostrowick, J. W. T. Patterson, H. R. Potter, ‡A. M. W. Rae, L. Ratnayaké, ‡W. B. Reid, C. A. Robson, A. Sanders, E. L. Sanders, G. G. Sanders, Margaret M. Sands, M. N. Sanyal, ‡G. S. Scott, C. M. Seward, J. McD. S. Slater, A. T. Sloan, T. R. C. Spence, ‡G. D. Steven, F. M. Stewart, A. Stuart, A. Sutherland, A. K. Tampi, Marion C. Taylor, L. Teitelman, D. W. C. Tough, G. A. Velluot, K. Vullakki, G. B. Walker, J. Walker, P. K. Walker, Sarah B. H. Walker, ‡K. B. Williamson, ‡A. J. Wilson, J. T. Wilson, J. H. Wright.

D.P.H.—W. P. S. Johnson.

** Highly commended for Thesis. *Commended for Thesis.
† Passed with first class honours.
‡ Passed with second class honours.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

AT the meeting of the College held on December 16th, Sir David Wallace, C.M.G., President, in the chair, Dr. George Mackay and Mr. C. W. Cathcart, C.B.E., were re-elected representatives on the board of management of the Royal Infirmary, Edinburgh, for the ensuing year.

The following candidates, having passed the requisite examinations, were admitted Fellows:

E. R. Chambers, C. B. Clarke, J. H. Dove, E. D. Smith, V. B. Gokhale, J. W. Hall, N. Hodgson, E. W. Ingle, M. S. Irani, V. M. Kaikini, R. Mailer, R. B. P. Monson, K. S. Nigam, A. L. Sheppard, P. A. Smuts, D. Steven, R. L. Stewart, T. J. R. Warren.

The Services.

DEATHS IN THE SERVICES.

Captain Clement Hoyle Heppenstall, Indian Medical Service, was reported as killed in action on December 11th, on the North-West frontier of India, in an attack made by tribesmen on a convoy proceeding from Datta Khel to Muhammad Khel, in the Tochi Valley. He was educated at Leeds, and took the Scottish triple qualification in 1908; he graduated M.B., B.S. London in 1914, and took the London diploma in tropical medicine, with distinction, in 1920. After filling the posts of resident medical officer at Leeds Public Dispensary and of medical officer to a silver lead mining company, he took a temporary commission in the I.M.S. on December 2nd, 1915, as lieutenant, was confirmed from March 13th, 1916, and promoted to captain on December 2nd, 1916. He had served in the recent war for three years.

Surgeon-Major-General Peter Stephenson Turnbull, K.H.S., Bombay Medical Service (retired), died in Edinburgh on October 7th, aged 85. He was educated at Glasgow, where he graduated M.D. in 1859, and entered the I.M.S. as assistant surgeon on October 1st, 1860, becoming brigade surgeon on April 1st, 1887, deputy surgeon-general on February 26th, 1888, and surgeon-major-general on February 26th, 1893; he retired on March 2nd, 1895. He served in the Abyssinian war of 1867–68, when he was present at the action of Arji, and at the storm and capture of Magdala, receiving the medal. In 1883–85 he acted as Inspector-General of Prisons, Bombay; from 1885 to 1888 he was secretary to the P.M.O. Bombay; and in the administrative grades he held the posts successively of P.M.O. in Sind and of surgeon-general with the Government of Bombay. He received a good service pension on Feb. 26th, 1893, and was made an honorary surgeon to the King on September 20th, 1902. He leaves a widow, three sons, and four daughters.

Major Albert Thomas James McCreery, R.A.M.C., died of appendicitis at Bombay on September 10th. He was born on October 26th, 1882, and educated at Trinity College, Dublin, where he graduated B.A., M.B., B.Ch., and B.A.O. in 1907. Entering the R.A.M.C. as lieutenant on August 1st, 1908, he was promoted to a brevet majority on January 1st, 1919, and to major on August 1st, 1920. He served in the recent war in Mesopotamia, where he took part in the defence of Kut under General Townshend, was twice mentioned in dispatches, on April 5th and July 13th, 1916, and received the Military Cross on June 3rd, 1916, as well as a brevet three years later

Medical News.

THE British Red Cross Society makes an appeal on behalf of the Russian Famine Relief Fund, which is already shipping stores to the value of £250,000 given to it by the British Government. A great deal more is needed if a continuance of the famine, with its attendant epidemics, is to be prevented. Dr. Reginald Farrar, until recently a medical officer of the Ministry of Health, is already in Moscow on behalf of the Society and of the Epidemic Section of the League of Nations to advise upon the distribution of the large amount of medical supplies contained in the British Government's gift. Sir Benjamin Robertson, K.C.S.I., who has had much experience of famine in India, is going to Russia, at the request of the British Red Cross Society, to examine existing methods of distribution in Russia of voluntary charitable relief from the British Empire and to make suggestions. The address of the treasurer of the Russian Famine Relief Fund is Fishmongers' Hall, London, E.C.4.

WE are informed that a Council for the Promotion of Oro-Nasal Hygiene has been formed, with Dr. Octavia Lewin as chairman and Dr. John Kynaston as honorary secretary. The first members are Dr. Henderson and Dr. Baskett. The objects of the Council are to extend the knowledge of the functions of the upper air passages, to obtain acceptance of the principle that oro-nasal hygiene should be adopted as the ordinary routine, and that operations should be performed only in exceptional cases. Communications may be addressed to the honorary secretary, 26, Welbeck Street, London, W.1.

PART of the great work done for the blind by Sir Arthur Pearson, whose death has aroused so much sympathy, was to provide training in massage for blinded soldiers and civilians. The Association of Certificated Blind Masseurs, 224, Great Portland Street, London, W.1, of which Sir Arthur Pearson was president, appeals to the medical profession to encourage the employment of blind persons skilled in massage. Its members are forbidden to undertake the treatment of patients without the consent and advice of a registered medical practitioner.

A PRACTICAL course on orthopaedics will be held by Dr. Calot at his clinic in Paris, 69, Quai d'Orsay, from January 23rd to 29th, 1922. The Spanish and English languages will be employed in the demonstrations as well as French; the fee is 150 francs, and the number of places is limited. Further information may be obtained from Dr. Colleu, 69, Quai d'Orsay, Paris.

THE annual report of the Royal Surgical Aid Society, presented to the fifty-ninth annual meeting, held at the Mansion House, on December 13th, showed that 19,490 patients had been assisted and 28,656 surgical appliances supplied to necessitous persons. The Lord Mayor, in moving the adoption of the report and accounts, urged that every effort should be made to augment the society's income and to extend its usefulness.

THE first Italian National Congress of women medical practitioners was held at Salsomaggiore from October 14th to 16th, and a national Association has now been organized.

A COMMITTEE, with M. Georges Clemenceau as president, has been formed to erect within the precincts of the St. Anne's Asylum, Paris, a monument to the memory of Dr. V. Magnan, who was for long its chief medical officer. It is hoped to unveil the monument next May and at the same time to celebrate the centenary of the discovery of general paralysis by Bayle. Subscriptions may be sent to M. Masson, 120, Boulevard Saint-Germain, Paris VI^e.

AT a recent meeting of the Metropolitan Branch of the Society of Medical Officers of Health mention was made by Dr. F. W. Alexander, M.O.H. Poplar, of the solution and sprayer used with great success in Poplar for destroying bugs. As several inquiries were made afterwards about this solution Dr. Alexander states that the fluid used is solution "D," made by Messrs. Sumner, of Hanover Street, Liverpool; it consists of certain synthetic derivatives of coal-tar in combination with volatile and mineral oils. It is sold in five-gallon tins, price 6s. a gallon.

THE twenty-fifth anniversary of the Finsen Light Institute was celebrated at Copenhagen on October 23rd.

AMONG the courses of lectures to be given at the Royal Institution before Easter is one by Sir Arthur Keith on "Racial problems in Asia and Australasia," being the first part of a course on "Anthropological problems of the British Empire."

DR. A. S. GUBB, of Mustapha Supérieur, Algiers, has received from the President of the French Republic the medal of the "Reconnaissance Française" in recognition of his services to the French Red Cross, in connexion especially with the auxiliary military hospitals at Aix-les-Bains (Savoie) and Algiers. Dr. Gubb's many friends in London, where he was engaged in general practice for many years, and acted also as editor of the *Medical Press and Circular*, will desire to congratulate him on the recognition he has now received from his adopted country.

THE number of nurse infants in the custody of foster mothers registered by the London County Council was 2,952 in 1920, and of this number 1,045 were under 1 year of age. The number of deaths in the year was 26 (20 of them among infants under 1 year), and so far as can be ascertained, 27 others who had been under the care of foster mothers died in hospitals or infirmaries. About 90 per cent. of the nurse infants are illegitimate, and this mortality bears very favourable comparison with the mortality among illegitimate children generally.

IN its annual report the State Children's Association points out that the amount of juvenile delinquency has now fallen to pre-war level. It repeats its protest against the practice of sending to prison boys and girls between 14 and 16, and juvenile adults between 16 and 21; the imposition of these sentences, often for a month or less, can, it is argued, have no effect on the offenders save to destroy self-respect. The number of children supported or assisted under the Poor Law has increased, as was to be expected in existing economic conditions. The scattered home system for Poor Law children who cannot be boarded out is winning approval, though the shortage of houses and the heavy cost of building has checked its application. The report makes reference to the Home Office Committee on Probation appointed at the end of 1920. The State Children's Association submitted its views to it, but the report has not yet been published.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medissera, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

DR. H. FERGIE WOODS (London) writes, in reply to Dr. Montgomery (November 26th, p. 924), that homoeopathists often use condurango in cases of cancer accompanied by painful cracks in the corner of the mouth.

HABITUAL HEADACHE.

"A. E." writes: Will "N. O." try a glass of water at bedtime, just after brushing the teeth with collosol argentum dentifrice, and honey as a finish to breakfast if the lady likes it?

DR. R. MACDONALD LADELL (Birmingham) writes: It would appear possible that the patient in question suffers from a conversion hysteria. This would not be inconsistent with the fact that her general attitude towards life is a bright one. Analysis of her dreams should reveal whether or not this is the case, and would provide a basis for cure.

FLEAS.

DR. S. MALLANNAH (Hyderabad, Deccan) writes, in answer to "A.B.S.'s" query (October 29th, 1921, page 726) as to preventing access of fleas to the skin, to suggest the use of powdered tobacco leaves on floors or floor mats, which he thinks much better than camphor.

IODINE TREATMENT.

"W. T.," who desires to resort to the intensive iodine treatment for tuberculosis and arthritis, finds that the tincture of the French *Codex* which is recommended for this purpose contains no potassium iodide. The proportion of iodine is 1 grain in 10 minims; when this amount is added to a small quantity of water a precipitate occurs.

*** We learn that at University College Hospital, where the concentrated 10 per cent. tincture of the French *Codex* is used, it is customary to dispense it undiluted and to direct the patient to measure the drops into water or milk and drink off the mixture at once. The preparation "Iodinosol" (E. T. Pearson and Co., London Road, Mitcham, Surrey), contains 6 per cent. iodine (approximately) and can be diluted with liquid paraffin, or dispensed in full strength to be taken in milk or on sugar. It is more difficult to measure than an alcoholic solution.

INCOME TAX.

"G. P." inquires whether the forthcoming reduction in the capitation fees for panel patients is a "specific cause" entitling him to a reduction from the average basis of assessment.

*** Yes, but it must not be forgotten that a "specific cause" does not constitute a ground for departing from the average basis except where there has been a change in the proprietorship of the practice during the period covered by the three years forming the average or in the year of assessment itself.

"G. A." desires to know whether the whole of the income derived from investments in the Dominions is liable to tax in this country or only that portion which is remitted.

*** In general income derived from stocks, shares, securities, and rents is chargeable according to the amount of income accruing, other forms of income according to the amount remitted. But "persons not ordinarily resident in the United Kingdom" can claim the remittance basis for either class of income, and this was the case in the reply to which our correspondent refers.

"L.D.," a medical woman who holds a county post, receives 3s. 6d. per diem when she is away from home as out-of-pocket expenses. Is this returnable as "income"?

*** No. It represents repayment to the recipient of special expenses, and we understand that the Revenue authorities make no claim to assess any portion of the amount which may not be expended—in the long run no doubt there would be no excess in any case.

LETTERS, NOTES, ETC.

CANCER HOUSES.

DR. D. OWEN WILLIAMS (Glandyfi, Cardiganshire) writes: As bearing upon the matter of cancer houses mentioned in your issue of November 12th, p. 818, it seems to me that I have read in the JOURNAL some time ago that cancer might be caused by mice and rats infesting houses; and these might have been present in the old houses referred to.

DESTRUCTION OF LICE ON HAIR-CLAD AREAS.

DR. E. W. GOODALL (Hampstead) writes: About two years ago I was anxious to obtain an effective but cheap insecticide for use on the heads of patients suffering from acute illnesses. Through the kindness of Mr. Bacot I was able to obtain a small but sufficient quantity of light wood oil and from another source I procured some heavy wood oil. After trial of these oils, both neat and diluted with paraffin, I came to the conclusion reluctantly that they were unsuitable for the purpose for which I required them, however valuable they might be for the lousy inhabitants of a typhus-ridden country. They have an uninviting appearance and a most unpleasant odour. I also found much difficulty in getting the samples I had to form a mixture or solution with paraffin.

IN the course of a letter on the treatment of verminous diseases Dr. W. B. HUNTER (Londonderry) writes: Perhaps the history of the following case may lead to a treatment easily carried out, and if the cure can be attributed to the remedy employed it would come in very handy to meet epidemics of typhus or "the minor horrors of war." Some years ago a patient was brought to me in deep distress, suffering from lousiness from which he could not free himself. He was in good circumstances and was able to go from home and take baths of every kind. His undergarments were boiled and daily put on clean and all to no purpose. I had read of such cases being successfully treated by giving the patient a mixture containing dilute hydrocyanic acid in ordinary doses. This was ordered for my patient, and in a short time to my surprise I must admit, and to the great delight of the patient and his family, he came to tell me he was completely free from his affliction. I inquired several times after and was informed there was no return of the trouble. It will be noticed that someone at that time—about forty-five years ago—had been using the same remedy successfully and had written about it. Recently I have tried the remedy in hospital patients, they all got quickly well, but as other remedies were being used at the same time how much of the cure was due to either remedy or to both together I cannot say. If the destruction of the parasite was due to the hydrocyanic acid circulating in the blood one would think that a weak and appropriate solution of it sprayed over head and body of patient or on his inner garments would be more quickly efficacious.

HERPES AND VARICELLA.

DR. JAMES B. MILLER (Bishopbriggs, Lanark) writes: Is the relationship between chicken-pox and herpes other than fortuitous? Chicken-pox is a very common disease, herpes not at all uncommon; it would be contrary to the laws of permutation were these diseases not to occur on occasion simultaneously in the same household, just as any other common ailments do. In how many instances does chicken-pox occur where the source of infection cannot be traced? In a very few of these it is doubtless preceded, associated with, or followed by herpes or any other of the thousand-and-one ills to which flesh is heir. Like all general practitioners I have seen many cases of these two diseases, but only recollect their association in the two following instances:

1. On October 21st, 1921, C. H. (5 years), was found to be suffering from chicken-pox, and on the same date her little sister, Ch. H. (1 year), had herpes; on November 3rd, 1921, Ch. H. developed chicken-pox.
2. Some years ago a child in a country house, half a mile distant from the nearest village, developed chicken-pox, her aunt, who looked after her, having had an attack of herpes zoster about two weeks before. The parents were certain that the child had not been in any way exposed to infection, and indeed stated that they knew of no case of chicken-pox in the vicinity; a careful inquiry in the neighbourhood, however, elicited the fact that chicken-pox was then somewhat prevalent in the nearest village, and that the child had actually been in contact with infected children.

Now it is apparent that in these two cases the occurrence of herpes was incidental; not only so, but Ch. H.'s herpes gave her no protection whatever against chicken-pox, her attack running the usual course.

THE LAW OF THE ROAD.

DR. JAMES HOLMES (Chesham Bank, Bury) writes: The Highway Act of 1835 enacts "That the driver of any cart, carriage, or other vehicle *shall* keep to the left or near side when meeting any other cart, carriage, or other vehicle." The penalty is £10 for an owner driver and £5 for a hired driver. Note that the driver has to keep to the "near side," not near half. It is presumed that this provision is to allow faster traffic ample room to pass. As a cyclist I have obtained several convictions under this clause, when drivers of horse vehicles seemed to think a cyclist had no right to be on the road. I am informed that under the Police Clauses Acts overtaking traffic must in populous places pass on the right or off side.

A CORRECTION.

IN Professor Swale Vincent's letter in our last issue (p. 1054) the word "chromophil" occurs several times; it should have been "chromaphil." The former word simply means deeply-staining, while the latter refers to the reaction to salts of chromium.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 31, 32, and 33 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

WE have received from the Anglo-French Drug Company, Limited, of 238A, Gray's Inn Road, W.C.1, a copy of the block diary they are issuing for 1922. It should prove a useful daily memorandum pad for the consulting-room desk.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page)	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.